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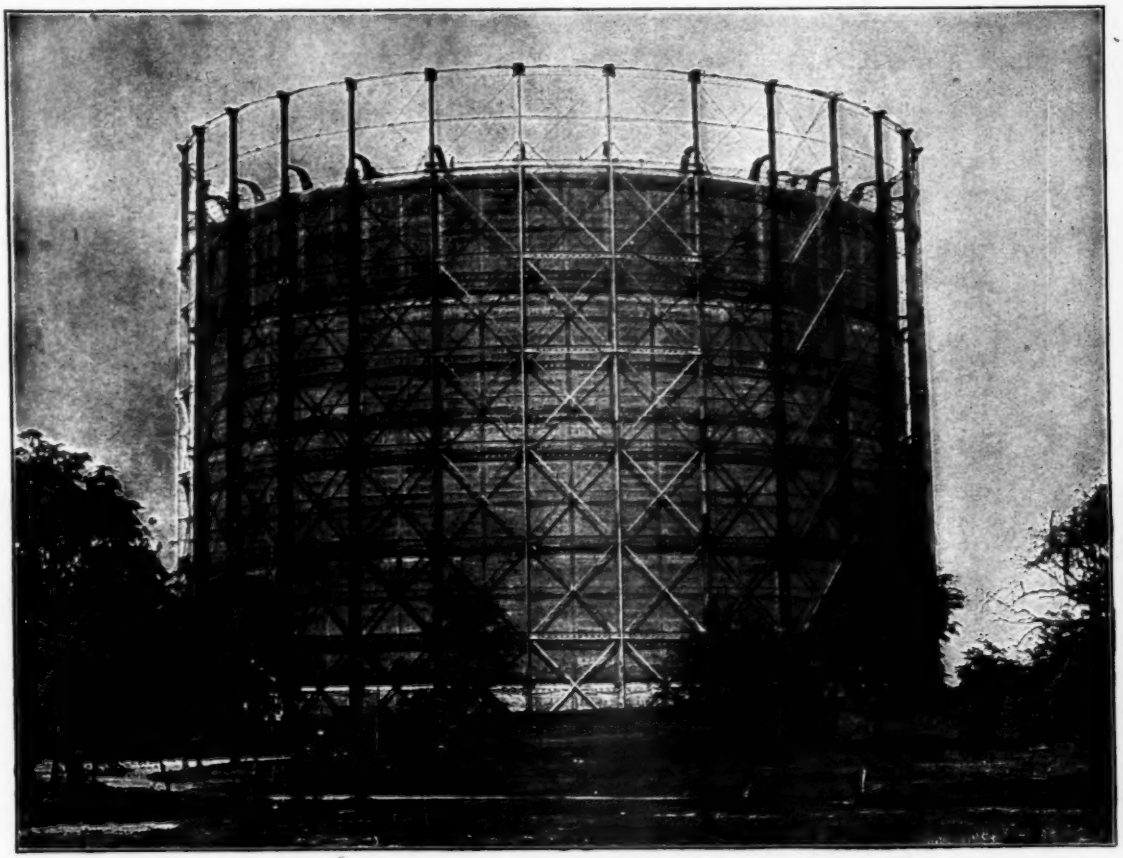

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KOPPERS

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Pushing Sale of Gas and Gas-Using Appliances as Means of Helping Country Over Coal Crisis Urged at Gas Institute Meeting

Wisdom of Continuing Pay of Employees While Absent on Military Service Discussed at Meeting—Baltimore Company has 100 Such Employees on Its Rolls—Classification of Utility Employees to Facilitate Exemption Work

The improvised meeting of the American Gas Institute, held in New York City, June 12, had the effect it was hoped it would have, in that it cleared away many doubts that had existed in gas men's minds and sent them back to their companies with definite ideas as to what is expected of the utilities in the present situation, and as to how they could best provide that their particular companies should not be found wanting in the hour of need.

A National Committee of Gas and Electric Service

Of the 340 who signified their intention of being present, as many as 250 were registered at the morning session.

The meeting was held on the fifth floor of the Engineering Societies Building, where ample auditorium space was provided. The acoustics were excellent.

President Forstall of the Institute started the proceedings with a reference to the National Committee of Gas and Electric Service, which, he emphasized, was not a committee of gas men and electric men, but a unified body with the object in view of linking the utilities to the Nation, to guard their interests and to insure that the great public utility body of the country would assist, to its utmost capabilities, the Nation through the existing war, not only in material resources, but to the utmost limit of its man-power, as well.

This committee has already established a headquarters in Washington, has employed a secretary, who has been made a member of the National Coal Board, and has already rendered important services both to the Government and to the Utilities.

Mr. Forstall urged prompt action on the part of companies in classifying employees as non-essential, desirable and imperative classes, previous to the putting into effect of the military draft and the subsequent exemption claims. Such action will have the effect of preventing suspicions arising that companies did not wake up to the fact that this or that man was more needed at the task in hand than at the front until he had actually been drafted.

He particularly asked of those in attendance, as gas men, and as leaders in their community life, to awake the people of their respective communities to the seriousness of the Nation's situation, and as to the magnitude of the task it has in hand.

J. W. Lieb Speaks

As chairman of the Committee on Gas and Electric Service, John W. Lieb, president of the National Electric Light Association, addressed the meeting on what has been done in the way of organization and service up to the present time, and some of the things it expected to accomplish.

The gas industry has been a big factor in the organization and definition of the purpose of the committee. There is a possibility that it may later become affiliated with the Munitions Board or some other equally important official body.

Through its closeness to the Coal Board—its secretary's membership in it—it expected to be able to insure to the utilities just preferential treatment in regard to an assurance of coal supplies. In the near future it will send out a questionaire to all companies as to their needs, as to the kind and quantity of coal supply, and as to points of shipment, etc., so the Coal Board may plan for an adequate supply.

Another important question before the committee is, as to what the Government may expect and what provisions are to be made for the supply of light, heat and power for the cantonments.

The matter of labor is a serious question. The utilities do not want to be stinting in man-power to the Nation. Exemptions will be asked only for such men as can render better service to the country by staying at home than by bearing arms. The fact was emphasized that this does not mean necessarily better service

to the companies, but to the country.

Mr. Lieb endorsed Mr. Forstall's suggestion as to classification of employees, and in amplification outlined what had been the course followed in Europe. At first, exemptions had been by classes. Then they were combed down to individuals. Now, when a company wants exemption for an employee, it needs not only to deal with the man himself, but must show clearly what has been its course in releasing man-power to the Nation, what efforts it has made towards developing substitutes, etc.

A point of interest was the speculation advanced by Mr. Lieb as to the duration of the war. The shortest period he gave was two or three years. Some considered it may even continue five years.

A. M. Barnes, of the Worcester, Mass., company, wanted to know what steps the company should take, once it had classified its employees, to put the action on record previous to exemption claims. Mr. Forstall expressed the opinion that it would be sufficient to have the employee designated to make such classification, make formal report to the board of directors of the company upon its completion.

Mr. Lieb shed some light as to the manner in which exemption of utility employees for reasons of the character of their work would be handled. The Boards of Review will take care of this class of exemptions, and there will be an engineer on each board.

Payment of Employees While Absent in the National Service

Mr. Forstall brought up the question of continuing the pay of employees while absent in the National service, quoting from a letter of the U. S. Chamber of Commerce, which is somewhat opposed to the principle and holds it to be a matter for the whole community to handle, rather than individual companies.

C. M. Cohn was called upon to tell why his company pays its employees the difference lost by entering the military service. As Mr. Cohn stated them, its reasons are brief and to the point. It wanted to encourage enlistment in the armed forces and it wanted to take care of its employees. No arguments that have since been advanced have caused its management to regret in the least particular the course it has decided to follow. One hundred of its employees are now in service and the cost to the company is $50,000 per year.

Samuel P. Curtis, of the American Gas Company, took the view that financial assistance from the company should come not by blanket arrangement, but in special cases. The company would not permit the dependents of any man entering the service to suffer, but would cheerfully provide for them. For men without dependents it makes no provision, nor in any case does it pay the money direct to the man.

H. W. Peck, of the Schenectady, N. Y., company, held that from a moral viewpoint alone no company remuneration should be paid to the man direct. Surplus money in army camps tends to increase the individual's temptations, he contended.

Carroll Miller, of the Western United Gas & Electric Company, desired to know the reason for bringing such matters up at the meeting; if it was the intention to call for a resolution from the American Gas Institute indorsing or opposing the payment of employees absent from business on military service. Mr. Miller thought such a course would be highly inexpedient, as this was a matter for the individual companies to determine for themselves. He agreed with Mr. Peck that a surplus of the funds to the soldier in the military camps would add to the temptations of the soldier.

J. T. Lynn, president of the National Commercial Gas Association, cited the case of the Canadian companies in which the money was paid to the families of the soldiers. The large companies paid the difference in the soldier's pay, but it was proving a burden. Mr. Lynn cited the Toronto company as one which had adopted this course, and, upon inquiry from Mr. Cohn, he added the Montreal company.

Howard E. Mann, engineer of the Montreal Light, Heat & Power Company, corrected Mr. Lynn, stating that the Toronto company no longer pays its absent employees, this practice having been discontinued. Four hundred and fifty employees have enlisted to date.

E. G. Cowdery, president of the Peoples Gas, Light & Coke Company of Chicago, stated that his company had under consideration the recommendation of the United States Bureau of Commerce that no permanent action be taken in regard to such payments for the present, when it made its rulings regarding remuneration of absent employees. The Chicago company therefore adopted the same course as the other Chicago utilities, namely, making arrangements for such payment up to the first of August. Not more than $30 is paid to single men with dependents; married men receive $40, and $10 additional for each child. No man receives such compensation as to make his remuneration greater than his salary was when with the company. Nothing is paid to single men without dependents. In the case of a widower with children, who has a housekeeper taking care of them, the company makes the same arrangements as if he were married.

S. E. Wolff cited the experience of a Canadian company in which the promise to reinstate employees upon their return from service indicated it might be considerable of an embarrassment to it to fulfill this promise. For example, one company had seven men promised reinstatement for a particular post. Up to the present those who have returned have not been either mentally or physically fitted to resume their duties, so the matter had not become vital as yet. Mr. Cohn pointed out that the Baltimore company would not be similarly embarrassed, as its promises extended only to those who were in the employ of the company at the time the rule was promulgated, consequently there could be only one man possible to which the post was promised.

New Business

In response to Mr. Forstall's request for suggestions of subjects for discussion, Burton Smart, of the Portland Gas Light Company of Portland, Me., asked advice as to what the company should do in regard to the extension of new business. Should efforts be made to curtail sales or should new business be pushed? Asked as to what his company's course had been, Mr. Smart conceded that it had adopted a middle course. It is doing no advertising, soliciting no business which requires any main extension, and it has laid half its canvassers off. Nevertheless, business had kept coming in as usual.

R. R. Young, of the Public Service Gas Company of New Jersey, stated that no man had been laid off in his company's new business department, though canvassing had been stopped, both in the gas and electric service in the lines of extending mains. Nevertheless the sales were exceeding those of the last year.

R. C. Graveley took strong exception to the curtailment of extending the uses of gas on the grounds of the superior service rendered the Nation by helping

it over the more acute problem; namely, the coal supply. He took the stand that a pound of coal used for making gas served a vastly greater purpose for cooking uses, for example, than a pound of coal burned raw. Mr. Peck agreed heartily with Mr. Graveley and recommended that the gas companies push hard on the question of coal conservation. Mr. Peck went a step farther and brought out the advantage of using gas as a service to the Nation, in that it rendered possible vast economies in labor. He therefore recommended that the companies push hard on the sale of labor-saving machinery, water heaters, washing machines, laundry equipment, etc.

William J. Serrill, of the United Gas Improvement Company, was impressed with the fact that the arguments advanced by this question might be good matter to keep in mind in asking for exemptions. He was emphatically of the opinion that the pushing of gas appliance sales was of such distinct value to the Nation that canvass salesmen, etc., also might possibly be included in the class of essential employees. If, however, it were not possible to so classify them, sales efforts should by no means be hampered, but should be carried on with older men if necessary.

Mr. Forstall expressed the opinion that in view of what the various speakers had said the question as to whether gas appliance sales should be pushed or not had been answered in the affirmative.

A. M. Barnes, of the Worcester company, made the suggestion that the conservation-of-coal and advantages-of-gas arguments might well be used for rate increases.

J. B. Klumpp, of the United Gas Improvement Company, thought that action should be restricted to construction, which would really serve to economize coal. There were various uses, particularly of electricity, which he considered might easily be curtailed for the present time, citing, as for example, the use of electric signs.

S. S. Wyer told of a series of tests undertaken by the University of Ohio, by order of the Governor of that state, on gas and soft coal, coke, gas alone and electric ranges. These tests to date had demonstrated conclusively the folly of using solid fuel for such services.

E. H. Palmer, of the Empire Gas & Electric Company, thought that we should enlarge our business as much as possible without the extension of mains and other work which would hamper the Government in other lines. He was more interested, however, in the matter of whether we were going to get the coal to make the gas or not.

The morning session was then adjourned and a very palatable luncheon was served in the adjoining room.

Commander Jessop, U. S. N., Urges Quick Action

At the close of the luncheon Mr. Forstall introduced Commander Jessop, chief engineer, Brooklyn Navy Yard, who gave a most impressive talk on the seriousness of the present national situation, and the necessity for quick, concerted action. Some of the more important points in his speech are contained in the following summary: The past history of the United States Navy has been that it has not been close enough to civilian life. One of the holdbacks is the fear of militarism. Militarism means the control of the Government by the military authorities. Every man could be trained and yet we would not have militarism. To show any latent fear that the conscription bill would make for militarism is unfounded Commander Jessop brought out the example of how easily the Civil War armies were disbanded.

The realization that France is most certainly a wonderful nation was partly explained by Commander Jessop's statement that France had unified her citizenship because she required some personal service from every man.

We must apply the same to this country, and that is why, as he states, the conscription bill was a godsend.

The argument so often advanced that this nation is safe behind its barrier of water was convincingly done away with by Commander Jessop's account of the Gallipoli expedition.

The ovation given Commander Jessop showed that the object of his speech, namely, that of bringing home the seriousness of the situation, had been accomplished.

W. H. Gartley, chairman of the American Gas Institute Committee, working in connection with the National Council of Defense, as well as the Committee on Coal Tar By-Products, spoke at considerable length, confining himself chiefly to toluol and benzol production.

Believing that the committee on the National Council of Defense will desire a report within a few days, he asked for a discussion on the attitude of the companies that might be expecting to produce toluol.

A question asked by Walter H. Fulweiler, of the United Gas Improvement Company, as to what is the smallest-size plant that can produce toluol, was answered in the following manner: It depends entirely upon how much toluol the Government will demand.

C. J. Ramsburg, of the H. Koppers Company, cleared up any misunderstanding which might have been in the minds of the men present regarding the process applied in the extraction of toluol and benzol. Being so close to this end of the business he gave many interesting facts and figures.

Mr. Fulweiler then explained the "C" process of toluol extraction which has been developed in England, due to the war.

The technical discussion as to toluol production was interrupted by Mr. Forstall on the grounds that the companies were more interested as to whether they would be called upon to produce toluol or not. Mr. Gartley was of the opinion that undoubtedly the larger gas companies would be called upon for such service.

After Mr. Gartley had finished, W. R. Addicks explained the details of the questionaire which the National Committee of Gas and Electric Service was sending out to gas companies. He went into the various details of the blanks to be sent out very thoroughly, and requested suggestions as to means of making them more clear and specific. Very few changes were suggested, as the charts seemed to be perfectly clear to those gas men in attendance.

The feeling which prevailed at the close of the meeting was one of confidence that the utilities' coal needs would be adequately cared for, due to the efforts of this committee in the coming year.

Employees Enjoying Garden Work

The demand among the employees of the Binghamton Light, Heat & Power Company for garden plots was so great that it was necessary to donate the use of two additional acres for their use. The work of planting the ground is well under way and the employees are enjoying the work.

Output of 3 Producer-Gas-Fired Furnaces An Axle a Minute

F. W. Steere Describes Heat Treating Installation in Ford Motor Company Plant—Result of Tests

To illustrate the possibilities of producer-gas firing, a set of furnaces which his company designed and built for the Ford Motor Company at Detroit, for heat treating front axles was described by F. W. Steere, chief engineer and vice-president of the Steere Engineering Company of Detroit, in a paper on "Producer Gas and Its Industrial Uses," presented at a meeting of the Detroit section of the American Chemical Society.

Three heat treatments are required. After the first heating, the axles are allowed to cool in the air by radiation. After the second heating they are quenched, after which they are again heated to a lower temperature and allowed to air cool.

The furnaces are so designed and laid out that the axles are pushed mechanically through the first furnace and kept moving for a space of about 10 ft., until they reach a temperature within 50 deg. of room temperature.

They are then mechanically fed into the second furnace, pushed through and quenched. A conveyor carries them from the quenching tank to the feeding mechanism of the third furnace, where they receive their final heating and are pushed out the rear end ready for the machine operations.

Axles Handled Mechanically

It will be noted that the axles are handled mechanically throughout the process, and after being fed into the first furnace, do not stop until the three heat-treating operations are complete. The three furnaces have a capacity of completely heating one front axle per minute. Although the heats are different in each furnace, the three furnaces are duplicates, with the exception of the draft and damper settings to bring about the required temperatures.

The hearth is 5 ft. wide by 14 ft. long. The axles are placed on specially designed cast-iron ways with the forks hanging down. When the furnace is filled with the axles, they in themselves form a practically solid floor which moves along through the furnace over the ways. Small pieces, such as cam shafts, spiders, spindles, etc., are piled on top of the axles and are carried through the furnace, receiving exactly the same heat treatment as the axles. These small parts are handled by hand between each furnace, as no mechanism has, so far, been designed to handle them.

The gas and air are delivered through the reversing valves to the regenerators at a pressure of approximately 3 in. of water. The four regenerators are placed directly under the hearth, the gas on the inside and the air on the outside. There is one combustion chamber immediately over each pair of regenerators and immediately under one-half of the hearth and extending under its entire length.

Furnace Reversed Every Fifteen Minutes

The products of combustion pass through flues along the sides of the hearth, sweep over the hearth, down through the flues on the opposite sides, divide after passing through the opposite combustion chamber, and pass down through the opposite pair of regenerators, through the reversing valves and out the stack. The furnace is reversed on an average of every 15 to 20 minutes. The products of combustion, while passing over the hearth, are directed by a series of jack arches placed every two feet at right angles to the movement of material over the furnace hearth. A solid division wall, built from the foundation to the hearth, separates the two pairs of regenerators. The furnace is inclosed in a steel jacket with 2½ in. of insulating material between steel and brick work.

Use of Muffle Increases Gas Consumption

We have built this type of furnace with a muffle to prevent the products of combustion from coming in contact with the steel, the idea of the muffle being to reduce the scaling to a minimum. The average gas consumption with the muffle was 264 cu. ft. of gas per minute, the average cubic feet of gas per ton of stock being 22,970. The efficiency of the furnace was 14½ per cent.

With the same type of furnace, running under exactly the same temperature conditions and delivering the same amount of stock, without the muffle, that is, the products of combustion coming in contact with the steel, we find that the average gas consumption was 73 cu. ft. of gas per minute, or 11,500 cu. ft. of gas per ton of stock, with a furnace efficiency of 26 per cent as compared with 14½ per cent as stated above. By furnace efficiency is meant the total amount of heat put into the stock, divided by the total amount of heat delivered to the furnace in the gas.

From these comparisons, the cost of operating is very much greater when the muffle is used and the practical results on this kind of stock, with skilful operation, are about the same in both cases. We find that the temperature of the stock heated in the furnace can easily be kept within a variation of 10 or 15 deg. By skilful operation, there is no difficulty in keeping the temperature variation within 5 deg. These results have been obtained over tests of several months' duration. The Ford Motor Company is adding six additional front axle heat-treating units of the Steere Engineering Company design, which will probably be in operation by the first of July.

Operating Data

The following data are the result of continuous tests taken on the above described front axle furnace from April 1 to 20:

Output of furnace, tons per hour	0.781
Cubic feet of gas per hour	9,000
Cubic feet of gas per ton of stock	11,500
Calorific power of gas, B.t.u. per cu. ft.	127
Cubic feet of gas per minute for "furnace standing by"	73
Pounds of stock per hour per sq. ft. of floor space	9.1
Per cent of total heat supplied furnace into stock, that is, efficiency of furnace	26
Per cent of total heat supplied furnace to stack	8
Per cent of total heat supplied furnace to radiation	66

In the above test the fuel supplied the furnace was measured by means of a station meter. This meter measured the gas supplied to two furnaces, the gas being divided between the two furnaces by means of Pitot tubes installed on both furnaces.

The amount of heat that went into the stock was determined from the rise in temperature of the stock, and its specific heat. This specific heat was determined by laboratory experiment and found to be 0.12.

In the above data, special attention is called to the calorific power of the gas, which is only 127 B.t.u. per cu. ft. The reason for this low B.t.u. is that the gas was made by gasifying pea coke.

This particular test has been selected out of a great many run to show that a very weak gas can be effectively used in a properly designed furnace, which is contrary to general opinion.

Factory Building Exposed to Weather on all Sides Heated Throughout by Gas

Gas Steam Radiators Used—Monthly Consumption During Winter 40,000 Cu. Ft. or Approximately a Cubic Foot of Gas per Month for Each Cubic Foot of Space Heated

By J. E. BULLARD

There are innumerable opportunities for selling gas for house heating. There are court rooms in small villages where court is held on the average only once a week, but where it is advisable to heat the rooms quickly at the times that heat is required. There are the headquarters of volunteer fire departments where it is necessary to heat only a portion of the buildings and to do this only when meetings are being held. There are small churches calling for heat on Sundays only. There are small stores with only a front exposure. There are cold rooms in dwellings which cannot be satisfactorily heated with the present heating system where gas can be used as an auxiliary heat. The list could be continued almost indefinitely. The gas company salesman who is thoroughly alive to the situation will find hundreds of prospects in his territory where house heating can be sold, not because it is cheap heating, but because it is more convenient or for some other reason meets the needs of the consumer better than any other fuel does.

In Northern Latitudes

Few salesmen, however, would look for a prospect for house heating with gas among the factories located on the Atlantic Coast in the latitude of New York City. Apparently such factories would be entirely outside the list quoted above. If the factory had an exposure on all four sides the possibility of securing its heating business would seem still more remote. There, however, is such a factory at Rosebank, Staten Island, on the mains of the New York & Richmond Gas Company, Stapleton, N. Y. It is so unusual to find a factory heated by gas in this latitude where the winters are so cold that this installation is especially interesting.

The building is two stories high, of brick construction and has no chimney or basement. It was originally built for a stable, which explains the absence of the chimney. Its strong construction, however, fitted it for manufacturing purposes. It was better suited for a handkerchief factory than any other building the Rosebank Handkerchief Company could find available. It was accordingly leased and handkerchief machinery installed.

Due to the absence of a chimney the heating problem was a serious one. Either a chimney must be built or some form of heating which does not require a chimney adopted. The most satisfactory form of heating which does not require a chimney proved upon investigation to be gas heating. The installation that promised to prove the most satisfactory was gas steam radiators. Accordingly five 10-section radiators were installed on the ground floor and four on the top floor.

With the exception of the coldest, windiest weather, when the cold wet winds blew directly from the ocean these heaters proved satisfactory. During the coldest, windiest weather, however, they did not heat the rooms quite as rapidly as desired, and next winter a few more heaters will probably be added to bring up the temperature more rapidly on cold mornings.

The building is about 30 ft. wide and 80 ft. long with ceilings 10 ft. above the floor. This gives a cubical content to be heated of about 48,000 cu. ft. The electric motor which drives the machinery, the lights, and the line shafting and other rotating parts generate some heat but this is so small that it cannot be relied upon even to the smallest degree for assistance in heating the building.

Gas Consumption

The gas consumption for last winter averaged about 40,000 cu. ft. per month, or roughly about a cubic foot of gas per month for every cubic foot of space heated. This business of course could not have been secured if an adequate heating system had already been in the building. It, however, has proven more satisfactory to the handkerchief company than would a heavy investment in property that was only leased.

There were no doubts about the cost for gas for heating being greater than the cost for coal. It, however, has saved a large investment in a heating plant. It has saved the price of a chimney and a furnace. It has saved the labor of a fireman. It has saved the cost of removing ashes. It has saved the space which would be required by a furnace. It has made the company independent of coal shortages. It has saved the investment that would have to be made in a coal supply in order to insure a daily supply large enough to constantly keep the building warm. The gas is always at the service of the company and it does not have to pay for it till after it has been used. This gives a month to several months' use of money that would otherwise have to be invested in a fuel supply.

Now that coal is so hard to secure, the price so high and deliveries so uncertain there is a balance in favor of gas in the case of this factory when conditions are analyzed in accordance with these factors. For this reason the Rosebank Handkerchief Company will undoubtedly continue to use gas for heating in preference to some other fuel of uncertain supply and variable price. It can absolutely rely upon the gas supply and is also protected from a sudden doubling in price and delayed delivery.

Active Beehive Ovens in United States

The number of active beehive ovens in 1916 was 65,605, as against 48,985 in 1915, an increase of 16,620. The number of idle ovens was 25,976, as against 44,125 in 1915. Abandoned ovens numbered 2,265, of which nearly 1,800 were in Pennsylvania and West Virginia. No new establishments and but 104 new beehive ovens at old works were reported to be under construction at the end of 1916, a low record compared with recent years, especially in view of the high prices and steady demand for coke throughout the year.

Effective Western Gas Displays

Los Angeles, Salt Lake City, Galveston and San Francisco Have Remarkable Gas Window Displays and Results

With the coming of the heated term many purveyors of gas and gas-cooking merchandise come to the front and demonstrate the superiority of gas as a fuel. Many concerns have cooking schools, with a gas range as the principal attraction. This is of course the most practical demonstration that could be given—the only drawback being that it comes to the attention of only the few who attend. For genuine, trade-producing publicity there is no agency like the show window—which is seen by all classes and conditions of people.

The Pease Furniture Company, Los Angeles, Cal., large house outfitters, during the big Spring Style Show, which attracted visitors from all over the west coast, attracted wide attention to their gas appliances, as they gave a window cooking school. The large window, which was elevated only about a foot above the floor, was fitted up to represent a modern sanitary kitchen. At one end stood a white enamel kitchen cabinet filled with all the supplies necessary for baking bread, pies and cakes. In the centre was a white enamel table, and at the other end a modern gas range with nickel trimmings. There was no background to the window—which opened out into the store. Here were placed about fifty comfortable chairs, for the convenience of the class, and on the low platform in the window stood the teacher, clad in immaculate white cap and apron, with all the cooking ingredients about her, telling how to make certain appetizing pies, cakes and breads, and practically demonstrating at the same time just how they were made. At the conclusion of the preparation the raw material was popped into the gas oven, and then followed a five-minute talk on the construction of the modern gas range, its different parts, and the advantages, particularly in the summer, over a big wood or coal fire. The spectacle of the neat little woman, moving about in such a brisk, businesslike manner, at once drew the attention of the passing crowds, and as they paused to watch her, they could see within the several rows of seated spectators, most of them with note books in hand. A crowd always draws another crowd, and scores who under ordinary circumstances would not have entered the store, upon seeing the others there, strolled in, and thus the demonstrator was able to talk to a good-sized audience every hour. The installation of the modern kitchen in the window also had another salutary effect, for it showed to the housewife just how the range would look in her own kitchen, and she was able to picture herself moving about, getting a meal—just as the woman in the window—without making a sight of herself with burning face and wet straggling locks, to say nothing of the cleanliness and lack of litter always engendered by coal or wood. It would pay any merchant dealing in gas stoves to arrange such a demonstration, particularly if there was a circus or celebration of any kind in town, or on Saturday afternoon, when the farmers and their wives are in to do their trading. Domestic science is so much a part of the schools these days that it would be easy to engage the local teacher, or even one of her smartest pupils to conduct the school, and explain the merits of gas as a fuel.

An appeal to local pride is another effective lever in introducing gas into numerous homes. The Utah Gas and Coke Company, Salt Lake City, gave a good demonstration of this recently. Tacked to the upper part of the window was a large canvas sign, lettered in red and blue:

MAKE FOR A CLEAN CITY
Use Smokeless Fuel
Gas for Cooking Coke for Heating
Gas stops Smoke Cheapest Kitchen Help Is Gas

A large card on an easel advised:

DEMONSTRATION IN PRESERVING ON GAS
YOU ARE WELCOME

As in the previous example, the large window was set to represent a kitchen. A table was placed down front near the glass, with jars of preserved fruit, and likewise jars, caps, and the utensils for preserving, while in the centre was a gas range. A white-capped and aproned woman demonstrated effectively how much easier it was to preserve with gas than with the old-time fuel, and the specimens of fruit shown was proof positive that the regularity of gas heat produced a better syrup and better looking preserves.

While heralding the efficacy of a gas range as a whole, it is well likewise to draw attention to its component parts. This was done effectively by the Galveston Gas Company, Galveston, Tex. Pasted on the window was a huge yellow paper crescent, four feet in diameter. In the background was the frame of a gas range, while strewn about were the parts that composed the stove. From each of these parts ran narrow yellow ribbons to little black discs pasted on the crescent. These discs were lettered in yellow, and gave the name of the part, generally with a line stating its advantages, such as "Adjustable cocks," "Broiling pan rack," "Enamel burner tray," etc. There were twenty-one parts shown, and a large card stated:

ALUMINUM STEEL GAS RANGE
EVERY PART PERFECT

Even in the summer, however, there are apt to be cool days, or at least, chilly mornings and evenings, when some warmth is desirable, and it would therefore be well to feature gas as a heating fuel. The Rector Gas Heating Company, San Francisco, Cal., brought this to the attention of the public by showing an attractively furnished living room. On a green rug in the background was a silver enameled radiator. At one side of the wall was a push button, which a little miss of five or six, in a white dress, was pressing. A card at her feet said: "Just push the button—A child can operate it," and a red ribbon ran from the card to the button. Another ribbon ran from the radiator to a second card: "An automatic burner turns on the gas to heat your room—Heat always on tap." A third ribbon ran from a card to a thermostat on the side wall: "When the proper temperature is reached the thermostat cuts off the heat—Never too hot; never too cold." It was a decidedly effective publicity stunt, and worked wonders in increasing the sales.

Spokane Company Makes Gas Despite Flood

In the last week of May there was a big flood in Spokane, Wash., and although the ground floor of the plant of the Spokane Gas & Fuel Company was almost entirely submerged, the supply of gas to customers was not interrupted. "Our purifying system choked up and for hours we were unable to by-pass. Our supply got down to almost zero. However, we pulled through and nobody was without gas," stated the manager's report.

Baltimore Company's Appliance Testing Laboratory Protects Interests of Consumer and, at the Same Time, is of Benefit to the Manufacturer

Big Claims Mean Nothing to Laboratory which Places Itself in Position of Consulting Engineer to Consumer and Submits Devices to Searchlight of Engineering Tests—Typical Cases Cited—How One Manufacturer Profited Through the Co-operation of the Laboratory

By H. M. RILEY

Assistant Superintendent of Gas Distribution, Consolidated Gas, Electric Light & Power Company of Baltimore

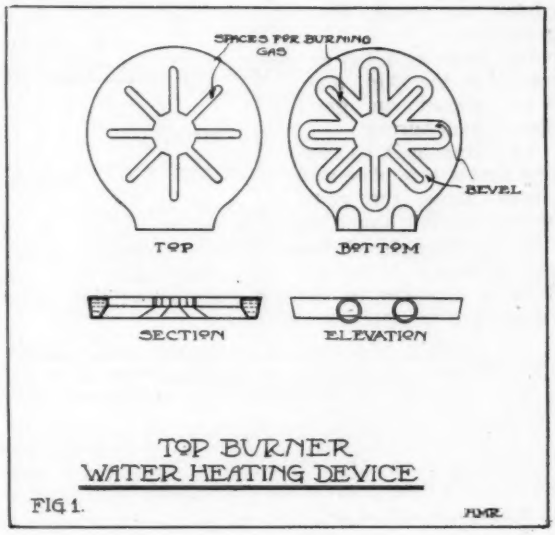
It seems particularly opportune, with the prices of household necessities and commodities "sky-rocketing" to almost fabulous heights that we members of the gas industry should pause for a moment in order to view with satisfaction the many and divers ways whereby the housewife has been able to profit and economize due to the efficient and whole-hearted efforts of the gas company. Although it would be far from a waste of time and energy to enumerate the many money and time saving lifts our business has given to the home, particularly in the kitchen, the writer proposes to get at the heart of this article immediately and show how the Baltimore company is looking after its friend, the customer, and doing careful, honest investigation in order that his purchases carry the stamp of good service and economy. In this connection our Appliance Laboratory with "horse-sense" engineering is endeavoring to act as counsellor for the customer in selecting the proper appliance for the particular need. Let us see then by way of some specific examples how the laboratory is practicing economic engineering for the household in an atmosphere where the veneer of advertising and over-rated claims play an extremely minor role. At the same time, let some concrete illustrations make us cognizant of the fact that helping the customer and helping the manufacturer ofttimes go hand in hand.

Water Heater for Top Burners of Gas Range

This device consists of a hollow casting, through which water can circulate, designed to be placed over the top burner of a range and connected in series with the ordinary kitchen storage tank. Fig. 1 shows the essentials of the heater which the manufacturers intimated, in an ordinary sized family, would supply enough hot water to take care of the needs in this direction and this during the cooking of the usual meals.

In order to derive a basis for calculations, the apparatus was set up as shown in Fig. 2 and the following tests were conducted.

In testing for straight efficiency the burner or burners were lighted and water started running through the water heaters until the outlet temperature was constant. The water was then deflected into a tank on scales and readings of inlet and outlet temperatures were taken at one minute intervals; at the same time the gas consumption and weight of water heated during the test were noted. This outline was followed for items A, B and C, which are enumerated in the paragraphs following.



ESSENTIALS OF HEATER BUILT FOR ORDINARY FAMILY NEEDS

In testing for circulating efficiency the heaters were connected to a small boiler and water was passed through until a constant temperature was reached. The flow was then stopped and the burner or burners lighted. The water heated circulated into the top of the boiler and after the boiler had become hot it was drained into a tank on scales and readings of the water temperature as the water flowed out of the boiler, were taken at one-quarter minute intervals. The gas consumed and the weight of water heated were noted. This outline was followed for items D. E and F.

In the test for efficiency for heating pans of water a definite weight of water was placed in the pan or pans, its temperature noted and the burner or burners lighted. At the end of the test the weight of water left in the pan or pans was recorded, together with its temperature and the consumption of gas. This outline was followed for items C, F and G.

The foregoing items were carefully checked with a different operator taking the data, and for each test such secondary data as temperature of gas, temperature of room, barometer, B.t.u.'s, etc., were recorded.

The main items were sub-divided as follows:

Straight Efficiency

A (1) Straight efficiency of device on *giant* burner for heating water, without anything on grate above same.

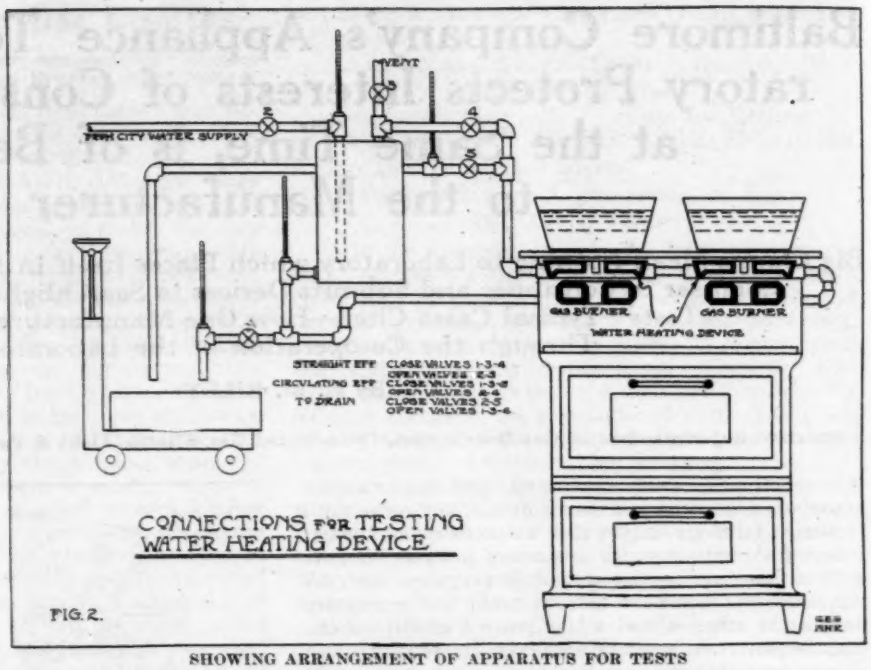
(2) Straight efficiency of device on *small* burner for heating water, without anything on grate above same.

(3) Straight efficiency of device on *both* burners for heating water, without anything on grate above them.

B (1) Same as A (1) except that a 9-in. circular asbestos plate backed with sheet iron was placed on grate above giant burner.

(2) Same as A (2) except that the 9-in. plate was placed on grate above small burner.

(3) Same as A (3) except that a 9-in. plate was placed above the giant burner and one above the small burner.



SHOWING ARRANGEMENT OF APPARATUS FOR TESTS

C (1) Straight efficiency of device on giant burner, also efficiency of burner for heating water in a pan 8 in. in diameter on the top grate above the burner (9-in. circular plate not used).

(2) Straight efficiency of device on small burner, also efficiency of burner for heating water in a pan 8 in. in diameter on the grate above the burner (9-in. circular plate not used).

(3) Straight efficiency of devices on both burners for heating water, also efficiencies of burners for heating water in 8-in. pans on top grate above burners (9-in. circular plates not used).

Circulating Efficiency

D (1) Circulating efficiency of device on giant burner for heating water and storing it in a small 4½-gal. boiler without anything on grate above burner.

(2) Same as D (1) except that test was run on small burner.

(3) Circulating efficiency of devices on both burners for heating water and storing it in the 4½-gal. boiler without anything on grate above burners.

E (1) Same as D (1) except that the 9-in. circular plate was placed on grate above giant burner.

(2) Same as D (2) except that the 9-in. plate was placed on grate above the small burner.

(3) Same as D (3) except that the 9-in. plates were placed on the grates, one above each burner.

F (1) Circulating efficiency of device on giant burner, also efficiency of burner for heating water in a pan 8 in. in diameter on the top grate above the giant burner (9-in. circular plate not used).

(2) Same as F (1) except that test was run on small burner.

(3) Same as F (1) except that test was run on both burners at once.

Efficiency for Heating Water in Pans on Top Grate Without the Devices Installed

G (1) Efficiency of giant burner for heating water in an 8-in. pan on grate above same, without the device installed.

(2) Same as G (1) except that test was run on small burner.

(3) Same as G (1) except that test was run on both burners at once and with two 8-in. pans of water, one above each burner.

Tabulation of Efficiencies

For the sake of brevity, the original data and figures from which the efficiencies were obtained, have been omitted:-

Straight Efficiencies

A Nothing on Grate above Burners; Device above Burners.

	Per Cent.
1. Straight Efficiency Device on Giant Burner.....	23.2
2. " " " " Small "	25.2
3. " " " " Both Burners.....	23.7

B 9-in. Plates on Grate above Burners; Device above Burners.

	Per Cent
1. Straight Efficiency Device on Giant Burner.....	43.8
2. " " " " Small "	51.2
3. " " " " Both Burners.....	48.1

C Pans of Water on Grates above Burners.

	Per Cent
1. (a) Straight Efficiency Device on Giant Burner.....	37.9
(b) Efficiency Heating Water in 8-in. Pan above Device.....	31.3
Total Efficiency.....	69.2
2. (a) Straight Efficiency Device on Small Burner....	42.5
(b) Efficiency Heating Water in 8-in. Pan above Device.....	32.6
Total Efficiency.....	75.1

	Per Cent
3. (a) Straight Efficiency Devices on Both Burners...	40.2
(b) Efficiency Heating Water in 8-in. Pans above Devices.....	32.3
Total Efficiency.....	72.5

Circulating Efficiencies

(Water Heated by Devices and Stored in Small Boiler)

D Nothing on Grate above Burners and Devices.

	Per Cent
1. Circulating Efficiency Device on Giant Burner ..	17.6
2. " " " " Small " ..	20.5
3. " " " " Both Burners....	18.4

E Nine-inch Plates on Grate above Burners and Devices.

	Per Cent
1. Circulating Efficiency Device on Giant Burner ..	36.6
2. " " " " Small " ..	41.8
3. " " " " Both Burners....	40.9

F Pans of Water on Grate above Burners and Devices.

	Per Cent
1. (a) Circulating Efficiency Device on Giant Burner.	29.2
(b) Efficiency Heating Water in 8-in. Pan above Device.....	30.2
(c) Total Efficiency.....	59.4
2. (a) Circulating Efficiency Device on Small Burner.	34.5
(b) Efficiency Heating Water in 8-in. Pan above Device.....	32.6
(c) Total Efficiency.....	67.1
3. (a) Circulating Efficiency Devices on Both Burners.	31.7
(b) Efficiency Heating Water in 8-in. Pan above Devices.....	32.1
(c) Total Efficiency.....	63.8

G Efficiency for Heating Water in Pans above Burners without the Device Installed.

	Per Cent
1. Efficiency Heating Water in 8-in. Pans above Giant Burner without Device.....	40.7
2. Efficiency Heating Water in 8-in. Pans above Small Burner.....	43.6
3. Efficiency Heating Water in 8-in. Pans above Both Burners.....	42.3

Calculations and Costs

By averaging the efficiencies of the device for storing heated water in a boiler, we obtain—

	Per Cent
Average of F (1a) (2a) (3a).....	31.8

Thus it can be seen that when used as a water heater solely, the device is a poor substitute for the ordinary gas water heater and we will assume a standard one with a circulating efficiency of 63.7 per cent.

Now, if we assume that heating water in pans over the top burners gives us an index or relation of cooking over the top burners, it will be noted that the efficiency of cooking on the top burners of a range without the device installed is

	Per Cent
Average of G (1) (2) (3)	42.2

On the other hand, the efficiency of cooking on the top burners of a range with the device is

	Per Cent
Average of F (1b) (2b) (3b).....	31.6

The total efficiency (efficiency for cooking and efficiency for heating water) obtainable from the top burners of a range with the device installed is

	Per Cent
Average of F (1c) (2c) (3c)	63.4

Hence, we lose in cooking with the device installed

42.2 per cent. − 31.6 per cent. = 10.6 per cent.

However, we heat water to the extent of

63.4 per cent. − 31.6 per cent. = 31.8 per cent.

Assume that 20 cu. ft. of 600 B.t.u. gas are used per meal on top burners of a range and assume three meals per day. Then $20 \times 3 \times 30 = 1{,}800$ cu. ft. of gas per month.

Since the top burners operate at 42.2 per cent efficiency without the device—

$.422 \times 1{,}800 = 759.6$ cu. ft. of gas are usefully used for cooking and the heat in the balance (1040.4 cu. ft.) is lost by radiation, etc.

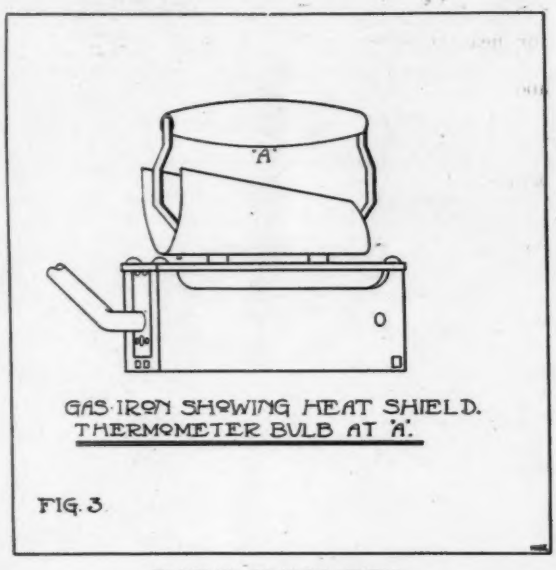


DIAGRAM OF IRON SHIELD

Also since the top burners operate at 31.6 per cent efficiency with the device installed, to accomplish the same amount of cooking there will have to be supplied:

$$\frac{759.6}{.316} = 2403.8 \text{ cu. ft. or}$$

$$2403.8 \times 600 = 1442280 \text{ B.t.u.}$$

Since 31.8 per cent goes into heated water when cooking with the device, we can heat from 60 to 120 deg. Fahr.,

$$\frac{1442280 \times .318}{120 - 60} = 7643 \text{ lb. or } 917 \text{ gal. of water in one (1) month.}$$

$$\frac{7643}{30} = 254.8 \text{ lb. of water heated per day while cooking.}$$

= 30.6 gals. of water raised 60 deg. Fahr. per day.

Cost of gas per month on above basis for cooking and heating water with device—

$$\frac{2403.8}{1000} \times .75 = \$1.80$$

It would be well to compare the cost of cooking without the device and heating an equivalent amount of water with a standard water heater operating at an efficiency of 63.7 per cent.

Gas for cooking (one month)

$$\frac{1800 \times .75}{1000} = \$1.35 \text{ per month}$$

Gas for standard water heater

$$\frac{7643 \times (120-60) \times .75}{.637 \times 600 \times 1000} = \$0.90 \text{ per month}$$

Total Cost—$1.35 + $0.90 = $2.25 monthly.

Yearly cost in both cases, assuming furnace with furnace water heater in operation six months during year.

With Device

$1.80 × 12 = $21.60 per year

Without Device

$1.35 × 6 = $ 8.10
$2.25 × 6 = 13.50

$21.60 per year

It is to be noted that the amount of water heated is somewhat small and accordingly, it would be interesting to carry these calculations further and to figure on a sufficient quantity of water.

Assume ten similar houses, four persons in each, containing the following cooking and laundry equipment:

HOUSE 1
Gas Range
Furnace Water Heater
Gas Water Heater

HOUSE 2
Gas Range
Two Devices (one on Giant and one on Small Burner)

HOUSE 3
Gas Range
Two Devices
Gas Water Heater

HOUSE 4
Gas Range
Two Devices
Gas Water Heater
Furnace Water Heater

HOUSE 5
Gas Range
Two Devices
Furnace Water Heater

HOUSE 6
Gas Range
Furnace Water Heater
Gas Water Heater
Gas Iron

HOUSE 7
Gas Range
Two Devices
Gas Iron

HOUSE 8
Gas Range
Two Devices
Gas Water Heater
Gas Iron

HOUSE 9
Gas Range
Two Devices
Gas Water Heater
Furnace Water Heater
Gas Iron

HOUSE 10
Gas Range
Two Devices
Furnace Water Heater
Gas Iron

Problem: To calculate the yearly gas bill, exclusive of use of oven in each case on the following assumptions:

26 weeks—Winter
26 weeks—Summer
Gas at 75 cents per 1000
Ironing six hours per week at 15 cu. ft. per hour
Clothes boiled on wash day, 2 hrs. (2 burners, 30 cu. ft. per hour)
1 Ironing day per week
1 Washing day per week
Water used on washing day—75 gal. (heated for a rise of 60 deg. Fahr.)
2200 lb. additional of hot water (raised 60 deg. Fahr.) required in Winter per week
3000 lb. additional of hot water (raised 60 deg. Fahr.) required in Summer per week
Gas iron consumption 4.5 cu. ft. per hour.

It will not be necessary to calculate in detail the gas bill in each case; it being thought sufficient to figure out two or three typical cases and show the entire results in tabulated form.

HOUSE 1

Winter

Cooking $1.35 × 6 = $8.10
Hot Water = Taken care of by Furnace Water Heater

$$\text{Ironing} = \frac{15 \times 6 \times 26 \times \$0.75}{1000} = \$1.76$$

$$\text{Boiling Clothes} = \frac{2 \times 2 \times 15 \times 26 \times \$0.75}{1000} = \$1.17$$

Summer

Cooking = $1.35 × 6 = $8.10

$$\text{Hot Water} = \frac{3625 \text{ lb.} \times 26 \text{ weeks} \times 60 \text{ deg. rise} \times \$0.75}{600 \text{ B.t.u.} \times 0.637 \times 1000 \text{ cu. ft.}} = \$11.10$$

$$\text{Ironing} = \frac{15 \times 6 \times 26 \times \$0.75}{1000} = \$1.76$$

$$\text{Boiling Clothes} = \frac{2 \times 2 \times 15 \times 26 \times \$0.75}{1000} = \$1.17$$

Total for year = $33.16

* * *

HOUSE 2

Winter

Cooking $1.80 × 6 = $10.80
Hot Water Needed = 73450 lb.
Gas used in cooking will supply—7643 lb. × 6 mos. = 45858lb.
Gas used in ironing will supply—

$$\frac{6 \times 15 \times 600 \times 26 \times 0.318}{60 \text{ deg. rise}} = 7441 \text{ lb.}$$

Gas used in boiling clothes will supply

$$\frac{2 \text{ burners} \times 2 \text{ hrs.} \times 15 \text{ cu. ft.} \times 26 \text{ wks.} \times .318 \times 600}{60 \text{ deg. rise}} = 4961 \text{ lb.}$$

Total Hot Water Supplied = 58260 lb.
Deficit of Hot Water = 73450 − 58260 = 15190

which can only be supplied by the devices operating with 9-in. plates over them and at an efficiency of 39.8 per cent.

$$\text{Cost for deficit of water} = \frac{15190 \times 60 \times \$0.75}{600 \times 0.398 \times 1000} = \$2.88$$

Summer

Cooking = $1.80 × 6 = $10.80
Hot Water needed = 94250 lb.
Gas used in cooking, ironing and boiling clothes will supply 58260 lb.
Deficit of Hot Water 94250 − 58260 = 36060 lb.

$$\text{Cost for Deficit} = \frac{36060 \times 60 \times \$0.75}{600 \times 0.398 \times 1000} = \$6.80$$

$$\text{Ironing for Year} = \frac{2 \times \$1.76 \times 0.422}{0.316} = \$4.64$$

$$\text{Boiling Clothes} = \frac{2 \times 1.17 \times \$0.422}{0.316} = \$3.12$$

Total for Year = $39.04

* * *

HOUSE 7

Cooking for Year $1.80 × 12 ..... = $21.60
Hot Water needed in Winter ..... = 73450 lb.
Hot Water supplied by boiling clothes in Winter = 4961 lb.
Hot Water suppled by Cooking in Winter..... = 45858 lb.

No hot water supplied during ironing since gas is used exclusively.

Deficit of hot water ..... = 22631 lb

which must be supplied by running the device exclusively as a water heater and at an efficiency of 39.8 per cent.

$$\text{Cost} = \frac{22631 \times 60 \times \$0.75}{600 \times 0.398 \times 1000} = \$4.27$$

Hot Water needed in Summer..... = 94250 lb.
Hot Water supplied by boiling clothes in Summer = 4961 lb.
Hot Water supplied by Cooking in Summer... = 45858 lb.
No hot water supplied in ironing.
Deficit of hot water..... = 43431 lb.

$$\text{Cost} = \frac{43431 \times 60 \times \$0.75}{600 \times .398 \times 1000} = \$8.19$$

Boiling clothes for year 2×1.56..... = $3.12

$$\text{Ironing for year} = \frac{4.5 \times 6 \times 52 \times \$0.75}{1000} \ldots = \$1.05$$

Total cost for year..... = $38.23

It will be noted that the tabulation of costs was calculated on the basis that the water heated would be used immediately after cooking, boiling clothes, etc. As a matter of fact the bulk of the hot water would not be used at these times, with the result that the disparity in costs would be greater and decidedly against the special water heating device.

In addition to the item of comparative cost, there would be other important points to consider in using the device, such as likelihood of the gas flame being unduly cooled when impinging on the heater, depositing soot and giving off odor. Then, too, the installation of such a device would render it extremely difficult to remove the burners for cleaning.

Accordingly, it would seem that this is not a desirable appliance for the kitchen. In justice to the inventor and manufacturer, however, such a device on a larger scale for use over a burner using large quantities of gas, such as a candy cooker, might be feasible.

Solid Top Heat Distributor for Gas Range

This device consists essentially of a solid cast iron top fitting over the entire top of the range and containing holes concentric over each burner with different sized rings to vary the opening for cooking. There is also a sliding baffle to divert the hot products of combustion to the point desired. The idea is to utilize only one burner for cooking in two different utensils. That is, a vessel with food is placed in the hole over one lighted burner and another is placed in the hole over an unlighted burner, whence the products of combustion in passing away from burner number one in their route to the flue, heat up vessel over burner number two. The claims made were a decided saving in gas, and in order to check them the following tests were carried out.

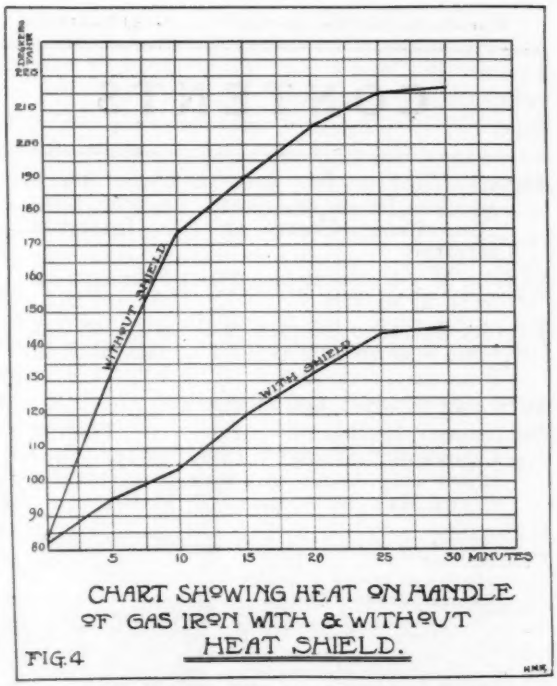
Two similar pans were placed on the heat distributor with 4 lb. of water in each. The giant burner was lighted under one of the pans, allowed to burn for one hour and the necessary data recorded. Afterwards, only one pan containing four pounds of water was used, it being placed over the lighted giant burner and the test conducted until all the water had evaporated.

The following results were obtained:

	With Distributor	Without Distributor
Time—Minutes	60	57
Gas Consumed—Cu. Ft.	18.98	17.92
B.t.u. Value of Gas	580	580
Lbs. of Water in each pan	4	4
Temp. Water at Start	75 deg. Fahr.	75 deg. Fahr.
Lbs. of Water Evaporated over Giant Burner	2.530	4.000
Lbs of Water Evaporated over other Burner	0.522	—
Heat Imparted to Water	4030.3	4414.3
Total Efficiency	36.6 per cent.	42.5 per cent.

Tabulation Showing Analysis of Costs in the Case of the ten (10) Houses

House	Cost for Cooking	Cost for Ironing	Cost for Boiling Clothes	Cost for Hot Water Summer	Cost for Hot Water Winter	Total Yearly Cost	Misc.
No. 1	$16.20	$3.52	$2.34	$11.10	..	$33.16	
" 2	21.60	4.64	3.12	6.80	$2.88	39.04	Maximum
" 3	21.60	4.64	3.12	4.25	1.79	35.40	
" 4	21.60	4.64	3.12	4.25	..	33.61	
" 5	21.60	4.64	3.12	6.80	..	36.16	
" 6	16.20	1.05	2.34	11.10	..	30.69	Minimum
" 7	21.60	1.05	3.12	8.19	4.27	38.23	
" 8	21.60	1.05	3.12	5.11	2.66	33.54	
" 9	21.60	1.05	3.12	5.11	..	30.88	
" 10	21.60	1.05	3.12	8.19	..	33.96	



HEAT CURVES WITH AND WITHOUT SHIELD

That is to say, there is a loss of 5.9 per cent when using the distributor and this figure would in general hold good when cooking food over the top burners. The decrease is undoubtedly due to the fact that in installing the distributor, we have formed a flue over top burners which by its chimney action has drawn in a large amount of excess air with the attendant cooling of the flame and loss in efficiency.

(*Continued from page* 591)

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Gas Institute Meeting of Distinct Benefit to the Industry

If there had existed any doubts as to the need of the meeting held this week by the American Gas Institute, anyone sitting through both sessions would have had them effectually dispelled. The gas industry was bubbling over with questions. To those who propounded them the information was imperatively needed. We are in the midst of abnormal times and face unusual conditions. The industry required guidance.

There was no diffidence manifested in putting the questions. They came forth like rifle shots. Those who could supply the needed guidance were unmercifully grilled, especially W. H. Gartley and W. R. Addicks. In general the questions were answered just as directly as they were propounded. The gas industry had its coat off. It was there on business; pressing, vital business, and it wasn't losing time. The atmosphere was as much unlike the usual convention atmosphere as day is unlike night.

Some questions, of course, had to be passed over. All were not answered. These are not peace times. The men being questioned have been largely the point of contact between the Government and the gas industry. There are other men besides gas men who would have been just as much interested in the information which, perhaps, the committee could have furnished. For that reason those being questioned thought well before replying. Numerous questions, which afterwards were answered, had to be propounded twice. There was an impressive reserve manifest. The atmosphere of the meeting was the atmosphere of war!

It is to be regretted that, due to its informality and its brevity, the meeting was not attended by as large a number as is in attendance at the usual convention.

The meeting will be remembered when many formal conventions have been forgotten. It was a solemn, almost momentous, occasion. It will mark an epoch in the history of the American Gas Industry.

Concerning Rate Increases

It is a human tendency to make a mountain out of a mole hill at every possible opportunity. Gas companies have been worrying considerably about the high prices they have been paying for materials and the relatively low prices at which they have been selling their product. Now and then we would hear of someone, almost timorously, suggesting increased rates as a possible solution; then complete silence. It might appear as if we were taking advantage of current conditions to our own profit. We might imperil the goodwill and confidence we had so laboriously built up.

The matter was brought up at the impromptu gathering of the American Gas Institute in New York City this week by the Institute's president, A. E. Forstall. A. M. Barnes stated a perfectly obvious truth when he said a utility was, the same as any other industry, entitled to a price for its product that covered the cost and gave a fair return on the investment. The owners are in a good part dependent for their very sustenance on the interest their investments bring them.

Surely there is nothing complex in this reasoning. It does not take an engineer or a lawyer to appreciate facts so obvious. The consumer will comprehend their significance instantly. He will understand and respond.

This is borne out by the statements of other speakers at the meeting. Numerous recent rate increases were

cited and in no one case was there complaint on the part of the public.

Mr. Barnes rendered a direct service to the industry in so abruptly revealing to us the true proportions of our magnified mole hill. New England brevity is a wholesome attribute.

In Partnership with the Consumer

This journal has consistently advocated the furnishing, gratis, by the gas companies of engineering service in connection with the sale of gas-using appliances. As has been pointed out before, the average housewife knows little of the theory of combustion, efficient application of gas, etc. If left to herself she is highly likely to select her gas range, for example, mainly on the basis of the shade of enamel used in conjunction with it rather than on the basis of gas economy.

Various large gas companies have already established appliance-testing laboratories, and run them on an impartial and non-partisan basis. What one of them is accomplishing and the manner in which it goes about its work is brought out by H. M. Riley in an article published elsewhere in this issue.

The Baltimore company is prospering, but Mr. Riley's article convinces us it has its best days ahead. It takes time for the kind of work this laboratory is doing to seep thoroughly into the minds of its patrons.

The Baltimore company has truly entered into a partnership with its consumers. It has made their interests its own. This is the essence of good business; the basis of the most sincere and active good will. It is in the highest degree a good investment. Already, we know, tangible results have been secured from it, but the work is still only in the constructive state. The big results lie in the future.

As has been stated before, it takes time for the significance of such work as this to seep thoroughly into the minds of a large number of people. Many of the Baltimore company's consumers already appreciate it. They are the missionaries who will carry the lesson to the greater part of those who remain.

Gas company executives and those who expect at some time to become executives should, by all means, read this article carefully. Sooner or later the time will come when every gas company will exercise as rigid care in selecting the appliances consumers are to buy as is exercised now in buying the manufacturing equipment the company itself uses.

A Golden Opportunity for Extending House Heating Business

Considerable trepidation is being felt by property owners who have hitherto obligated themselves to supply heat to their tenants; also by those who own and live in their own houses, as to the possibility of coal reaching unheard of prices and as to its being unobtainable at any price. In at least one large city the former class has sought with more or less success to shift its responsibility as to price and to avoid its liability as to supply onto the shoulders of the tenants, through coal clauses in leases; and the latter class, having no such recourse, is wearing an anxious look, and lending receptive ears to rumors of the possibility of having to pay $20 a ton even at seaboard. Both would welcome with open arms the seer who could show them a way out of their difficulties. The gas man holds the secret. He is presented with the somewhat unusual opportunity of being a public benefactor and at the same time of reaping a substantial return.

The landlord class does not want to have to take advantage of his coal clause. If he does it will prove costly in the long run. He, too, is rendering a service. He must render a good one in proportion to the rents he charges or suffer a shifting about of tenants, which is always costly.

Many of this class do not know what has been done in recent years in heating houses with gas. Ordinarily, they would not lend a willing and patient ear while the gas man told his story. At present they are in a receptive mood. The gas men's story, even in normal times, if given a proper audience, would carry conviction. Told under the present circumstances it will add considerable business to our lines which will continue even after normal times are restored. Gas for house heating has advantages that outweigh even differences in fuel costs.

The man who is his own tenant will give the gas man an even more willing audience. His situation is more acute than that of the landlord. The latter is relatively a large buyer. The former is a small buyer. The reference to his belief that coal prices will reach $20 a ton was not stated in jest. Such fears have been expressed by householders, sincerely believing they were uttering an unpleasant truth.

To-day is the golden opportunity for the gas man to extend his house heating load. Later in the year the opportunity might be lost. The fears of the property owner may not materialize.

Beehive Coke Production in 1916

The production of beehive coke in 1916 was the greatest ever recorded in the United States, and the average value per ton was higher than in any previous year. The official figures for 1916, just published by the United States Geological Survey, Department of the Interior, show that 35,464,224 tons of beehive coke, valued at $95,468,127, were produced last year, an amount differing by less than 1 per cent from the preliminary estimates of C. E. Lesher, of the Geological Survey, published on January 1, 1917. The output in 1916 represented an increase over 1915 of 7,955,969 tons, or 29 per cent, in quantity, and $38,522,584, or nearly 68 per cent, in value. The average value per ton of the coal used in making beehive coke in 1916 was $1.26, an increase of 21 cents, or 20 per cent, and the average value of the coke was $2.69, an increase of 62 cents, or 30 per cent.

Publications

Proceedings of the American Gas Institute—1916

Cloth bound; in 2 volumes; each 9 x 6 in.; 1369 pages illustrated. Publisher, American Gas Institute, George G. Ramsdell, secretary, 29 West Thirty-ninth Street, New York City.

Contains the papers presented at the Chicago meeting, Oct. 17-20, 1916; names of officers, past and present; membership lists with addresses; reports of committees, etc.

The following papers are included: "Measuring the Flow of Unpurified Gases at High Temperatures," by J. M. Spitzglass; "The Bulletin System as a Means of Instructing Employees," by C. S. Ritter; "Organizing for Cost Reduction in the Consumers' Bookkeeping Department," by F. H. Patterson; "Gas versus Electric Cooking," by S. C. Bratton and G. D. Mantle; "Industrial Gas Appliances," by S. Tully Wilson; "Cost Records on Appliance Installations," by H. B. Lohmeyer; "Outline of Credit System in Operation by Peoples Gas Light & Coke Company," by Robert Blair; "Manufactured Gas for House Heating," by G. S. Barrows and C. C. Winterstein; "Unit Costs in Distribution Work," by A. A. Treadway; "Oxy-acetylene Welding in Distribution Work," by Charles Wilde; "Equivalent of the Observed Heat Value of the Light Oil Scrubbed from Coke Oven Gases," by J. W. Schaeffer; "The Removal of Sulphur from Spent Oxide," by E. J. Murphy; "Purification of Water for Gas-making Purposes," by W. H. Fulweiler; "Some Characteristics of Gas Oils," by E. C. Downing; "Gas Ignition," by T. J. Litle, Jr.; and "Chicago's Experience with a Separate Lighting Division," by C. A. Luther.

An "Average Eye" for Heterochromatic Photometry and a Comparison of a Flicker and an Equality-of-Brightness Photometer

Authors, E. C. Crittenden and F. K. Richtmyer, associate physicist and physicist respectively of the U. S. Bureau of Standards, published by that bureau as Scientific Paper No. 299. Paper-backed; 7 x 10 in.; 113 pages illustrated. This volume is available for distribution and those interested may obtain a copy by addressing the bureau.

The comparison of lights of different colors is supposed to be based on an "average normal eye." This paper records an attempt to approximate the results of such an eye with typical color differences by using a large number of observers. In particular, results obtained by a flicker photometer and by an equality-of-brightness photometer, with different degrees of color differences, are compared. In terms of the Ives-Kingsbury test solutions, for which the proposed normal ratio of transmissions (with a 4 wpc. carbon lamp) is 1.00, the average of 114 observers gives a ratio of 0.99. By using these test solutions results obtained on the flicker photometer by a small number of observers can be corrected so as to give normal values with a high degree of accuracy. On the average, equality-of-brightness measurements also vary in proportion to the test ratio, but erratic variations often overshadow these systematic differences. For sources having relatively high intensity in the blue, flicker values tend to fall below those obtained on the usual standard photometers, but the difference is comparable in magnitude with the uncertainty of the latter values.

The Embrittling Action of Sodium Hydroxide on Soft Steel

Author, S. W. Parr, professor of applied chemistry, University of Illinois. Bulletin 94 of the Engineering Experiment Station of that university at Urbana, Ill. Paper bound; 9 x 6 in. booklet; illustrated. Price thirty cents.

The results of an investigation, along the lines indicated in the title, conducted at the experiment station. The chapter headings include: The embrittlement of steel by caustic soda; the effect of caustic soda on iron; the embrittling action of sodium hydroxide on soft steel; description of the test, testing apparatus, and material tested; results of the physical tests; boiler water treatment; and bibliography.

Public Utility Rates

Author, Harry Barker, formerly associate editor, *Engineering News*, and more recently *Engineering News-Record*. Cloth bound volume; 9 x 6 in.; 371 pages, including tables. Published by McGraw-Hill Book Company, 239 W. Thirty-ninth Street, New York City. Price $4 net.

Though manifestly the author's sympathies shade more towards the public official's side of the question than towards the utility's side, his discussion of the subject in question shows a decided and, to a very considerable extent, successful effort towards a strictly impartial setting down of the facts and analysis of them. His opportunities of securing the necessary information on which to base his judgments have been exceptional, and the number of years he devoted to the task are an assurance that extreme care was exercised in selection and compilation.

His chapter on gas utilities leaves much to be desired. His facts—statistical and historical—are accurate, but his understanding of the gas business is essentially academic. His study of this branch of the utility field is manifestly that of published documents and papers. There is no outward indication whatever that he got out among gas men and discussed the situation with them and in this manner learned their point of view. He views the trend of the gas industry, the matter of combination companies and the future of the industry largely from the electrical man's point of view. Those gas men who have attended electric association conventions and talked in the lobbies with those in attendance there—not the big figures, but those whose horizons have not yet been extended beyond their own industry—will readily perceive the basis of the author's opinions in these matters:

The various chapters of the work discuss the following subjects: Development of utility regulations, utility privileges and obligations, rights of the public; product and service companies; some definitions of rates and services; various bases for rates; details of the cost-of-service study of rates; tests for fixed and operating charges; fair value of utility property; valuation as an engineering task; appraisal of land and water rights; reasonable return; interest, compensation for risk and attention; extra profits; depreciation as it affects utility rates; miscellaneous problems indirectly related to rate-making; problems of railway rates; problems of express transportation rates; rate problems of street and interurban railway transportation;

problems of water rates; rate problems of gas utilities; rate problems of electricity supply works; and problems of telephone rate-making.

Modern Gasworks Practice

Author, Alwyne Meade, manager of the Wapping Works of the Commercial Gas Company, London, England. Cloth bound; 529 pages; illustrated. Publisher, John Allan & Company, London, England. Sold in the United States by D. Van Nostrand Company, 25 Park Place, New York City. Price $7.50 net.

A really excellent and complete work, though written entirely for the English gas maker. A careful reading will reveal to the American reader sharp points of difference between gasworks' practice in this country and that of England. The author has endeavored to present his matter in as clear and as non-technical manner as possible and has succeeded admirably.

Considerable space is given to cost computations and the results are all expressed in English denominations, a factor that will inconvenience the American reader in no small degree.

In the opinion of the reviewer advertising matter, except insofar as it relates to other technical works of the same publisher, should be rigidly debarred from space between the covers of such a work as this. In this volume at least an eighth of an inch in thickness is added by the inclusion of equipment advertising.

The various chapters of the work cover: The planning and laying out of gasworks; foundations, gasworks' buildings, etc.; the horizontal retort bench; the control of horizontal retort settings; vertical retorts and chamber ovens; refractory materials; retort-bench appurtenances; the mechanical handling of materials; electrical plant in gasworks; gas-making and other coals; the carbonization of coal; the condensation of coal gas; exhausting machinery; the preliminary purification of coal gas; the recovery of cyanogen; the dry purification of coal gas; the storage of gas; and water gas: its manufacture, enrichment and use.

Electric Service Editorials

Author, Frank Putman; 32 pages; paper backs; 7 x 16 in. Issued by United Electric, St. Louis, Mo.

A collection of editorials printed in local newspapers setting the company's case before the people of its territory. An excellent collection worthy of careful reading by all utility executives.

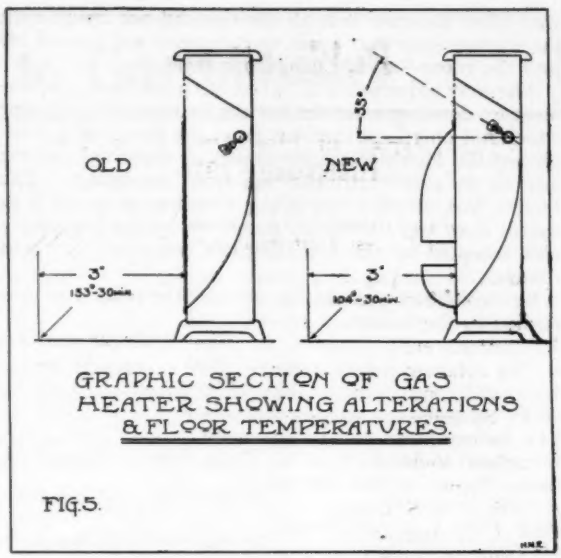
(*Continued from Page 587*)

Here then we have a second illustration of a device that is practically useless to the customer and which has evidently been gauged by the manufacturer on a qualitative rather than a quantitative basis.

Heat Protecting Shield for Gas Iron

When a gas iron is given its proper consumption of from 4¼ to 4½ cu. ft. of 600 B.t.u. gas per hour, it is found, at least in Baltimore, that the temperature just under the handle gets unbearably hot to the knuckles of the operator, and to this end the testing laboratory set about devising a shield that would ensure the retention of this very useful and economical gas appliance in the household.

After considerable time spent in testing, the laboratory was in a position to furnish data to the manufacturer with the result that he was enabled to design a heat shield which was entirely satisfactory.



GRAPHIC SECTION OF GAS HEATER SHOWING ALTERATIONS & FLOOR TEMPERATURES.

FIG. 5.

SHOWING NEW DESIGN AS COMPARED WITH THE OLD

Fig. 3 shows the shield installed on the iron and the tabulation sets forth concisely the function and worth of the same.

The data was culled from tests which consisted in placing a blackened bulb thermometer just under the handle and reading temperatures, at regular intervals for a definite period of time.

Tabulation Showing Temperatures under Handle of Gas Iron With and Without a Heat Shield

	With Shield	Without Shield
Cu. ft. of Gas Burned	2.23	2.25
B.t.u. Value of Gas	610	610
Humidity	44 per cent	44 per cent
Room Temperature	82 deg. Fahr.	83 deg. Fahr.
Temp. at handle after 0 Minutes	82 deg. Fahr.	83 deg. Fahr.
" " " " 5 "	95	132
" " " " 10 "	104	174
" " " " 15 "	120	190
" " " " 20 "	132	210
" " " " 25 "	144	220
" " " " 30 "	146	222

Fig. 4 shows the above data graphically.

Needless to say the use of the shield has been quite successful and the results obtained out in practice have amply warranted the expediture of time and effort.

Redesigning Gas Heater so as to Lessen Floor Temperatures and Insure Proper Lighting of Burner

Some few years ago, our laboratory received for purposes of test, a very attractive looking heater made by a prominent gas appliance manufacturing company. During the examination and tests of this heater, two very objectionable features showed up, as follows:

The temperature on the floor in front of the heater rose to an excessive degree after a reasonable burning time and it was found that as a result the oil would be drawn from a hard wood floor.

The burner tips pointed in such a direction that it

was often the case that all the tips did not ignite with the consequence that much unconsumed gas passed off into the room—a very dangerous condition.

The first objection was overcome after some experiment by devising a fender for the bottom of the heater which not only kept the heat from the floor but accomplished the highly desirable object of throwing out the heat in an almost straight line from the heater. The fender was worked out along ornamental as well as useful lines and the design gotten up by the laboratory was accepted by the manufacturer practically without change.

Below follows a tabulation showing the results accomplished by the fender.

	With Fender	Without Fender
Cu. Ft. per hour	31.8	29.4
B.t.u. Value of Gas	610	605
Temperature of Room	77 deg. Fahr.	72 deg. Fahr.
Temp. Floor 3 in. from heater after 15 minutes	99 deg. Fahr.	145 deg. Fahr.
Temp. Floor 3 in. from heater after 30 minutes	104 deg. Fahr.	153 deg. Fahr.
Temp. Floor 6 in. from heater after 15 minutes	110 deg. Fahr.	134 deg. Fahr.
Temp. Floor 6 in. from heater after 20 minutes	117 deg. Fahr.	144 deg. Fahr.
Temp. Floor 10 in. from heater after 15 minutes	112 deg. Fahr.	131 deg. Fahr.
Temp. Floor 10 in. from heater after 30 minutes	117 deg. Fahr.	138 deg. Fahr.

(Thermometers with blackened bulbs, placed on floor in front of heater on the center axis at distance stated.)

The second objection, which can be realized is of a more serious nature, entailed quite a considerable amount of experimental work in order to be nullified. This work included the devising of baffles above the burner in various shapes and placing of same in many positions; also different sized vent holes variously located. Finally the scheme was hit upon to change the angle at which the burner spuds pointed out from the burner stringer. To this end a quadrant was placed on the end of the burner and various positions tried out by lighting the gas. This work enabled us to establish an angle of 35 deg. in which position it was practically impossible to light one tip without the other tips igniting and this even when the cock was so turned as to pass a minimum amount of gas.

Fig. 5 shows a graphic section of the heater before and after alteration as well as the maximum floor temperatures after thirty minutes burning.

Needless to say the suggestions on the heater were accepted with thanks and adopted almost in toto by the concern making the appliance.

Conclusions

The writer has endeavored to show in this somewhat "pot-pourri" article how the Consolidated Gas, Electric Light & Power Company of Baltimore quantitatively separates the merits and shortcomings of an appliance, weighing the one against the other so that in the end the customer might participate in any balance of good that the article might possess.

Obviously, this practice will, in the future, be of increasing benefit to the manufacturer and at the same time further strengthen the bond of friendship between the company and the consumer.

Furnace Heated to 2700 Deg. Fahr. Consumes 2100 Cu. Ft. an Hour

Service, issued by the Public Service Gas Company of New Jersey, describes an interesting industrial gas installation recently secured as follows:

The Hanovia Chemical Company, of N. J. R. R. Avenue and Chestnut Street, Newark, one of the concerns owned and operated by the Chas. Engelhardt interests of New York, has just completed a furnace in which a very refractory porcelain-like material is fired.

This company makes high temperature pyrometers, the thermo couples of which consist of platinum and platinum iridium wires, enclosed in a protectory tube of porcelain. These tubes are being made at the local plant.

The industrial fuel department was called upon to advise with Professor of Ceramics, George H. Brown, at Rutgers College, who is connected with the Hanovia Company in a consulting capacity.

The furnace used is a fire brick structure, uncommonly large, measuring 5 ft. square and 6 ft. high, the heating chamber being 2½ ft. square by 5 ft. high. In order to fire the porcelain tubes the furnace must be heated to about 2,700 deg. Fahr., which, it was calculated, would require about 2,000 ft. of gas an hour.

A tentative design of the burner equipment was made consisting of three sets of burners placed at one, two and three feet from the floor of the furnace, each of the burner heads being placed just inside the openings left in the furnace wall and the three burners on each level connected to a common manifold, mixing tube and injector which in turn were connected to gas and air supply manifolds.

This equipment was built and installed, but because of the peculiar characteristics of the furnace, did not work entirely satisfactorily, thus necessitating several changes in design.

With the completion of these changes the temperature required was easily attained, the material treated in about eight hours of operation per batch.

The gas needed to heat the furnace to 2,700 deg. Fahr., when loaded with material, was found to be exactly 2,100 cu. ft. per hour, making an estimated annual consumption of about 6,000,000 cu. ft.

Unusually Long Pipe Burners Used in Fireproofing Material Drying Installation

An unusual and interesting installation of extra long pipe burners was recently completed in a Newark factory, making what is believed to be the largest single gas-heated unit in the city.

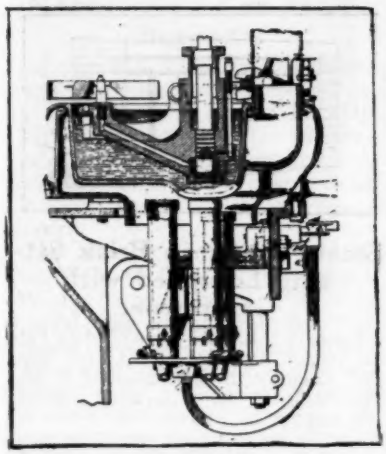
The appliance consists of a reinforced concrete oven about 30 ft. long, 10 ft. wide and 8 ft. high, equipped with four sets of tracks and twenty steel trucks for loading and unloading.

In this oven there are eight blast burners, each 25 ft. long, made up of two pieces of two-inch pipe, having a total of 7,250 drilled holes for ports and a gas consumption of 3,000 cu. ft. per hour.

Considerable difficulty with poor combustion was expected on account of the unusual length of these burners, but our fears proved groundless, for after slight adjustments the burners were operated with good results.

This equipment is used for the purpose of drying rapidly large pressed blocks of fire-proofing material.

Patents Pertinent to Gas Industry



Heater for Type Metal Melting Pot Consists of Gas Burners

Patent No. 1, 220,128; described in Patent Office *Gazette*, March 20, 1917, page 849. Mauritz C. Indahl, Philadelphia, Pa., assignor to Lanston Monotype Machine Company, Philadelphia, Pa. Filed Aug. 7, 1915. Serial No. 44,314. (Cl. 158-106.)

A frame supports the melting pot and burner support. Underneath the melting pot are a group of connected parallel vertical mixer tubes with vertically adjustible connections between the body of the tubes and the frame. A removable burner base is secured to and extends under the group of mixer tubes with an injector nozzle for each tube mounted in the base. A common gas supply chamber is provided in the base with which all of the nozzles communicate, with an individual gas regulator valve provided for each nozzle. A gas pipe and a regulating valve on the pipe completes the equipment.

Internal Combustion Engine Provided with Rotating Sleeve Valve

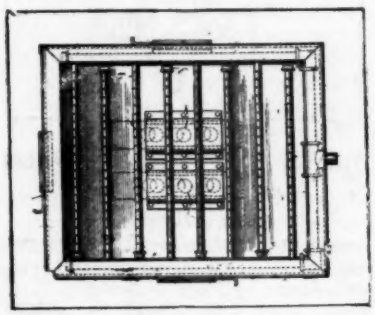
Patent No. 1,214,922; described in Patent Office *Gazette*, 2-6-17, page 154. William S. Howard, Belleville, N. J., assignor by mesne assignments, to Russel M. Everett, Bloomfield, N. J. Filed Dec. 23, 1911. Serial No. 667,435. (Cl. 123-80.)

A port opening is provided in the side wall of the cylinder which extends the length of the travel of the piston. A rotatable sleeve valve which is situated between the piston and the cylinder wall operates in such manner so that a port opening coincides with the opening in the cylinder at the proper time.

Meter Measures Flow of Gas by Orifice Measurement

Patent No. 1,217,899; described in Patent Office *Gazette*, 3-6-17, page 5. George Hale Barrus, Brookline, Mass. Filed Dec. 21, 1914. Serial No. 878,225. (Cl. 73-167.)

This flow meter consists of a diaphragm chamber with a permanently open orifice in the diaphragm through which the gas passes. A differential pressure gage with connections on each side of the diaphragm, and a bypass around the diaphragm, complete the equipment.



Gas Stove Equipped with Double Manifold

Patent No. 1,220,412; described in Patent Office *Gazette*, March 27, 1917, page 985. Benjamin F. Gollmar, Baraboo, Wis. Filed April 17, 1916. Serial No. 91,778. (Cl. 158-104.)

The top of this stove is arranged with a manifold on each of two sides, these manifolds being connected with a common gas supply. Alternate burner tubes extend inwardly from the manifold. The sides are ventilated, and a compartment is placed beneath the burners, the heat being transferred through vent openings in the top of the compartment.

Resuscitating Device Operated by Manual Means

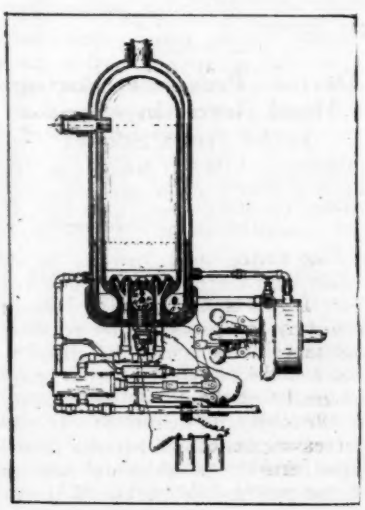
Patent No. 1,214,941; described in Patent Office *Gazette*, 2-6-17, page 161. Frank Fairchild Morris, Pittsburgh, and Frederick Melchior Luchs, Wilkinsburg, Pa., assignors to the firm of Drägerwerk, Heinr. and Bernh. Dräger, Lübeck, Germany. Filed Dec. 24, 1915. Serial No. 68,499. (Cl. 128-13.)

This device consist of a cylindrical casing with a port between its ends. A manually operated valve divides the casing into two chambers. A suction pipe is connected to one chamber and a pressure pipe is connected to the other chamber. Pressure gauges are provided to indicate the suction and pressure produced in each chamber under all conditions of operation. An injector is arranged between the two pipes to discharge into one of them, and to entrain air or gas from the other pipe. Each chamber may be vented to the atmosphere.

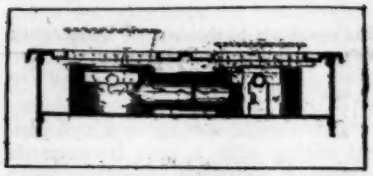
Water Heater Supplied with High Pressure Air

Patent No. 1,218,965; described in Patent Office *Gazette*, March 13, 1917, page 414. Justin Kay Toles, San Francisco, Cal. Filed December 20, 1915. Serial No. 67,938. (Cl. 126-351.)

This water heater consists of a base on which a gas burner is mounted, and three shells, with the upper parts hemispherical in shape, also mounted on the base. The inner space is the combustion chamber and is provided with a restricted relief vent, the intermediate space contains the water and the outer space is a dead air space. A hydraulic motor operates a rotary air pump, both the air supply and gas



supply being controlled through the operation of the motor. The mixture of gas and air is ignited by an electric spark.



Hoods to be Attached to Gas Burners

Patent No. 1,219,728; described in Patent Office *Gazette*, March 20, 1917, page 707. Alfred O. Gutsch and Ella C. Gutsch, Sheboygan, Wis. Filed Jan. 7, 1916. Serial No. 70,739. (Cl. 126-216.)

A burner pan has the burners positioned as usual. Hoods, with top and bottom open, fit over the burners. These hoods fit around the burners and connect with each other, and are closed at the bottom by the burner pan.

Heating Attachment May Be Fastened to Gas Burners

Patent No. 1,217,464; described in Patent Office *Gazette*, 2-27-17, page 1175. Frank Leach, Detroit, Mich. Filed Sept. 13, 1916. Serial No. 118,959. (Cl. 126-248.)

This attachment consists of a distributing plate with a series of perforations, and a baffle plate separated from the distributing plate by a spacer. Perforations are provided in the distributing plate and the baffle plate. A crown plate, with a depending flange having perforations below the baffle, is also attached, the whole apparatus being fastened to a gas burner.

Device Prevents Boring Head Becoming Separated from Socket

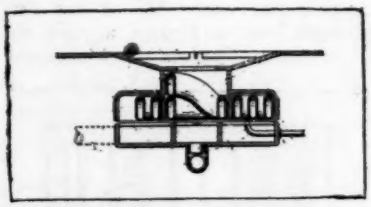
Patent No. 1,214,773; described in Patent Office *Gazette*, 2-6-17, page 101. Emil Gairing, Cleveland, Ohio. Filed Dec. 31, 1915. Serial No. 69,546. (Cl. 29-145.)

The boring tool consists of a socket with the boring tool attached thereto by a shank. The tool shank is locked in the socket by rotating the tool in the same direction as that followed when the tool is being driven, it being unlocked by rotating in the opposite direction. If the locking means should become disengaged, due to the accidental turning of the tool in the backward direction, the tool is retained in the socket by a spring controlled detent on the socket engaging an annular groove in the shank.

Pipe Cutter Provided with Two Cutting Dies

Patent No. 1,216,426; described in Patent Office *Gazette*, 2-20-17, page 775. Frederick William Erickson, New York, N. Y. Filed Aug. 3, 1916. Serial No. 113,015. (Cl. 164-40.)

Two cutting dies are securely held in support, each die having a pipe receiving bore. One of the dies is held eccentrically in a tubular frame which rotates, the other die being immovable. The bores of the cutting dies are in proximity to each other, the rotatable frame being operated by a ratchet and pawl. Two mandrels are spaced in the pipe to be cut, their inner ends being in line with the cutting faces of the dies.



Burner for Water Heater Also Heats Cooking Utensil

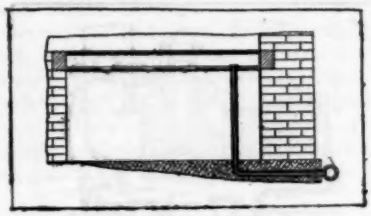
Patent No. 1,219,494; described in Patent Office *Gazette*, March 20, 1917, page 624. James G. Scott, Washington, D. C. Filed Oct. 1, 1914. Serial No. 864,473. (Cl. 126-53.)

A water heating coil is surrounded by a casing, this casing being divided into two sections, a central section and an annular section which surrounds the central section. The central portion of the water heating coil is placed within the central portion of the casing, and the outer section of the coil is in the outer annular portion of the casing. A gas burner is located under the central section and an independent burner is also located under the outer section of the casing. A framework for supporting a cooking utensil is placed above the center portion of the casing, to receive heat from the same burner which heats the center portion of the water heating coil.

Composition Fuel or Fire Lighter

Patent No. 1,219,178; described in Patent Office *Gazette*, March 13, 1917, page 486. Edward Horace Smirk, St. Annes-on-the-Sea, England. Filed June 19, 1916. Serial No. 104,598. (Cl. 44-1.)

This lighting compound is composed of brewers' yeast, coal dust and coke dust.



Steam Boiler in Brick Setting Equipped with Gas Burner

Patent No. 1,219,072; described in Patent Office *Gazette*, March 13, 1917, page 450. Samuel A. Boyd, Charleston, W. Va. Filed Sept. 13, 1915. Serial No. 50,461. (Cl. 158-7.)

The gas burners are of frustopyramidal formation arranged in a longitudinal direction in the fire box and below the boiler. The sides of the burners about to form a continuous concave upper surface, the bottoms being provided with openings and the tops with obliquely disposed jets.

Material for the Preservation of Lumber Consists of Coal Tar Products

Patent No. 1,220,001; described in Patent Office *Gazette*, March 20, 1917, page 801. Peter C. Reilly, Indianapolis, Ind. Filed March 28, 1914. Serial No. 827,966. Renewed June 9, 1916. Serial No. 102,802. (Cl. 134-78.5.)

This material consists of a mixture of all of the distillates of coal tar which are driven off therefrom up to a temperature of 1,000 deg. Fahr. One of the elements has a specific gravity of not less than 1.14, while another has a specific gravity of not less than 1.22, these materials being dissolved in lighter oils distilled from coal tar.

Frame Equipped to Supporting Several Pipes

Patent No. 1,220,343; described in Patent Office *Gazette*, March 27, 1917, page 962. Richard D. Kimball, Medford, Mass. Filed Feb. 17, 1916. Serial No. 78,085. (Cl. 137-75.)

This method for supporting a number of pipes is essentially a frame work with slots opposite to each other in the branches. A pipe carrying shaft with a roller mounted thereon is secured to the slots.

News of the Gas Industry

Newton (Ia.) Gas Plant Burned

Newton's $30,000 municipal gas plant was completely destroyed by fire of unknown origin Tuesday afternoon, June 5. The superintendent, W. E. Carpenter, and one assistant, Emmett McGuire, who were in the building, narrowly escaped.

Gas was manufactured at the plant from crude oil for heating and cooking purposes only. The loss equaled the total valuation or $30,000. Insurance for only $6,000 was carried. The plant will be rebuilt at once. A favorable wind prevented the spread of flames to other buildings in the same district.

California Company Bought

Ferdinand R. Bain, president of the Southern Counties Gas Company of California, has purchased the Ontario-Uplands Gas Company's properties, is the announcement made recently, possession to be taken July 1.

Pipe lines to distribute gas to the two cities is under construction. It will extend from Pomona to the Ontario-Upland system. The supply will be from Brea and Whittier oil fields.

Increase Granted at Independence, Kan.

Mayor Ott of Independence recently received from the state public utilities commission a decision on the recent application of the Independence Gas Company for an adjustment of its rates. Instead of the old rate of $1.10 a thousand cubic feet on which it was claimed the company was losing money, the commission permitted the adoption of this graduated rate:

For the first 5,000 cu. ft., $1.25 per 1,000 ft.; over 5,000 and under 10,000 cu. ft., $1.10 per 1,000 ft., and for all over 10,000 ft. 95 cents per 1,000. Bills still were left subject to a 10 per cent discount for prompt payment. The minimum service rate of 25 cents was permitted by the commission to be raised to 75 cents. It is estimated that, under this scale, the gas company should earn a net income of 6.75 per cent on its investment.

Paris Gas Supply Restricted to 11 Hours per Day

Maurice Violette, Minister of Subsistence of France, has issued a decree suspending the distribution of gas to private consumers after 9 o'clock at night and during several periods of the daylight hours, aggregating a suspension of thirteen hours daily in the use of gas.

The decree also suspends the use of hot water in hotels and private houses except on Saturdays and Sundays.

New Plant Included in Elmira Public Service Commission Order

The Public Service Commission, Second District of New York, has transmitted to Corporation Counsel Boyd McDowell an order and decision stipulating certain provisions to be performed in the gas question at Elmira, N. Y. The action was taken according to the order at a session of the Public Service Commission, held in Albany on May 29, 1917, and signed and sealed by Frank X. Disney, secretary to the commission.

Among the provisions are, that before the proposed gas rates are fixed under the new plan whereby the Elmira Water, Light & Railroad Company is authorized to build a new gas plant, and before the tentative rates are fixed, the company must give the city authorities and the Corporation Counsel 30 days' notice of the date when it is proposed to put the new plant in operation; and that possible refunds to be made in case the rates shall prove too high, shall bear interest at the rate of six per cent.

The entire situation contained in the order and decision was reviewed in signed statements by Seymour Van Santvoord, Chairman Frank Irvine, James Carr and John Barhite, commissioners of the Public Service Commission.

Higher Rates Asked at Jamestown, N. Dak.

Asserting that the increased cost of labor has greatly affected their business, the Jamestown Gas Company has requested City Council for a 25 per cent increase in rates, to be made general throughout the entire city. No action has been taken on the issue as yet.

Many Employees of Laclede Company of Military Age

The Laclede Gas Light Company permitted 439 of its men employees of military age to absent themselves from work during the early hours of registration day, June 5, in order to register.

C. L. Holman, president of the company, notified acting Mayor Aloe by letter that 439 of the 1,387 men employees of the Laclede are of military age.

If all of the Laclede men are drafted after registration it will create a problem for the company to fill their places while they are in the army, Holman said.

Investigation to be Made at Waterloo, Ia.

Waterloo, Ia., gas consumers will pay only $1 per 1,000 cu. ft. for gas for at least three months more. At a conference of city officials and of officials of the Citizens' Gas & Electric Company recently, it was agreed to rescind the order increasing the gas rates to $1.10, while the city will repeal the ordinance prohibiting the gas company from increasing its rates. During the next three months an investigation will be made to determine whether a raise is justified.

The investigation will be made by gas experts mutually agreed upon by the city and gas company officials. The expense of the investigation will be defrayed by the gas company. Upon the report of these investigators the council expects to establish an equitable rate.

Consumers using prepay meters will be reimbursed for the difference between the new and old rate.

S. P. Curtis, vice-president of the local company, and an officer in the American Gas Company, Philadelphia, Pa., of which the local concern is a branch, who was in Waterloo, attended the conference.

Failure of Coal Contract Brings Suit

The New England Gas & Coke Company has entered suit for $100,000 in the Suffolk Superior Civil Court against Kelly Bros. Coal Company, Snow Shoe, Pa., for alleged failure of the latter to fulfill a contract to supply the plaintiff with coal. Under the terms of the agree-

ment, the Kelly Company, on July 15, 1916, was to ship 50 car loads of railroad coal to the plaintiff and a like amount each week thereafter until April 1 this year. The price to be paid by the plaintiff was $1.25 a gross ton.

Another Company Raises Rates in Pennsylvania

An increase in the minimum gas rate for maximum quantities from 17 cents to 24 cents 1,000 cu. ft. has been announced to the Pittsburgh city department of supplies by the officials of the Allegheny Heating Company. Accompanying this raise of rates, advice has been issued to Director Franklin P. Booth that the city should seek to reduce its consumption of gas. The raise in rates and the advice to restrict consumption both come, say the heating company officials, because of the shortage of available supply and the increasing cost of well materials.

Another Gas Well at Wooster, Ohio

Another evidence of gas in the rich oil field south of Wooster, Ohio, was discovered recently when a big gas well came in on the Whittaker farm. The well was drilled by the Ohio Fuel & Gas Company, and is producing over 2,000,000 cu. ft. This is the second gas well to be found in the midst of this oil field. There are several oil wells on the Whittaker farm.

It is believed now by oil and gas men that the new oil well on the Morgan farm south of Shreve will run as high as 100 barrels a day for a time at least. The first showings have been very encouraging, and may result in a rush of oil drillers to that section.

Large Acreage Under Cultivation by Rutland Company

Nearly 60 acres of the Rutland Railway Light & Power Company's land is under cultivation. Part of this acreage is being worked by employees of the company and part by other organizations. In addition a farm of 140 acres has been rented to be used for miscellaneous gardening and the raising of chickens.

The men are taking a lively interest in the entire enterprise and enjoy the work.

Ashtabula's Liberty Loan Co-operation

In order to encourage its employees to purchase war bonds the Ashtabula Gas Company has adopted a plan which will make it easy for them to do so. The company will subscribe for a number of bonds and sell them on the easy payment plan, perhaps at a payment of 10 per cent of purchasers' wages per month which will be deducted from their salaries. Up to an amount equal to 25 per cent of their salaries, the company will sell the bonds in a way which will net the purchasers' interest at the rate of 4½ per cent, the company providing the additional amount.

Gas Company Wins in Main Tax Case

In an opinion handed down by the State Supreme Court and received recently by James B. Yard, county prothonotary, the decree of the local court in the case of the City of Erie, Pa., vs. the Pennsylvania Gas Company, was affirmed. The Common Pleas ruling allowed the city only a $7.50 per mile on gas mains, instead of the $30 penalty sought.

In its action the city claimed a total of $3,606.60 for 122.22 miles, for the year ending April 8, 1915. The decree, handed down March 23, 1916, fixed $7.50 as the annual tax, and Judge U. P. Rossiter ordered the city to pay the costs.

Gas Company at La Crosse, Wis., Moves to New Offices

The Wisconsin-Minnesota Light & Power Company is now located in its handsomely appointed, brilliantly lighted new offices in the Chamber of Commerce building on North Fifth Street between Main and State Streets, La Crosse, Wis.

The Wisconsin-Minnesota Light & Power Company has the largest office in the downtown district, and its furnishings and fixtures represent the last word in office equipment.

On either side of a handsome tiled floor at the front of the big room are ranged the latest designs of gas and electric fixtures for home, factory and office use. The stock of practical fixtures is complete and shows every device for the use of gas and electricity to facilitate work and add to the comfort and convenience of patrons in their daily life.

"Serve the public" is the slogan of the fixtures department, and in order to render the best possible service and make it possible for customers to acquire any device they may desire for their home or business the company on easy terms has arranged to sell these devices on the installment plan.

Back of a long counter which extends the width of the room are desks of department managers, accountants and clerks, grouped so as to expedite work and quickly serve customers.

In the rear of the office is a large room, 60 feet long and 40 feet wide, to be utilized for the testing of meters.

In the basement, under the first floor suite of rooms are various compartments and storage rooms for the big stock of lamps and other materials required in the conduct of the business.

New Service Station at Council Bluffs, Ia.

The Citizens' Gas & Electric Company has leased from the Droge Elevator Company the building at 612-14-16 South Main Street, Council Bluffs, Ia., now occupied by the Hughes-Irons Motor Company, and expect to take possession July 1. The lease is for a ten-year term.

The gas company expects to materially increase their business in Council Bluffs, and as one feature of the new building will open a store for displays and exhibits.

The company will also maintain in the building seven or eight automobiles to provide better service in Council Bluffs.

The present offices at 26 Pearl Street have long been overcrowded with the store-room, trouble department, checking department and all the other work that has to be done there. These various departments are to be moved to the new location, leaving the present building on Pearl Street to be used solely for office purposes.

Both the new quarters and the old offices will require some rather extensive overhauling before they are ready for use.

THE GLOUCESTER (MASS.) GAS LIGHT COMPANY has loaned to the local branch of the Red Cross a gas stove for the workers and the Coast Defence men.

Gas Company to Sell New War Medals for French Relief Fund

The Grand Rapids Gas Light Company has granted a request from New York to handle sale of the bronze medals struck by the French Government to commemorate the entry of the United States into the world war. When the medals arrive the company will place them with their solicitors and collectors for sale at 50 cents each, the proceeds going to the fund for the relief of the French wounded. The gas company will not profit by the sale of the medals.

Hearing on Rate Increase at Brazil, Ind.

The Public Service Commission of Indiana will hold a hearing in Brazil, Ind., Tuesday, June 19, on the petition filed before the commission by the Brazil Gas Company, requesting permission to raise and readjust the gas rates in that city. The company proposed to make the maximum rate $1.50 per thousand feet, with a minimum charge of 75 cents, which is an increase in both cases of 25 cents. This hearing will be held by Commissioner McCardle, who announces that the patrons of the company are invited to attend the hearing and give their opinions on the question of raising the rates.

Use of Coke for Fuel Gaining at Greenville, N. C.

Last year Greenville, N. C., began the use of coke for fuel, to replace the more expensive coal which has been used so extensively; and Southern Public Utilities Company undertook to furnish this new product. Owing to the fact that coke had to be shipped in from the Charlotte branch, it was found difficult to supply the increasing demand.

But, with the establishment of the new gas plant in Greenville, which uses coal instead of oil for the manufacture of gas, this difficulty bids fair to be entirely overcome.

The Imperial Hotel, one of the first large users of coke for heating (gas is used for cooking, altogether), is now taking two hundred and fifty tons of the new fuel annually; the Southeastern Life Insurance Company building, on Main Street, heated so satisfactorily last year by using coke, is another regular consumer; and the new Davenport apartments, on East Washington Street, has recently closed a contract with this Company to be supplied through the coming year. The output of the Greenville gas plant which may be supplied to the people of that city, amounts to approximately two thousand tons, and the outlook is that this entire amount will be taken locally, by reason of its high heating efficiency, and the cleanliness and ease with which it may be handled.

Devices for Preventing Accidents and Securing Economy

The Malden & Melrose (Mass.) Gas Light Company has devised several interesting "wrinkles" to safeguard their employees. One of them is designed to prevent small pieces of hot coke from falling through the iron grating of discharging holes in front of the benches in the retort house floor. The bars are an inch apart, and this was too wide a spacing to prevent danger to employees below; so a ¼-in. wire mesh was fastened to the under side of the grating. This is a sure prevention of the recurrence of an accident which resulted in a painful burn on the neck of an employee stationed below, and yet the purpose of the grating, to provide ventilation when the charges are being drawn, is not interfered with.

Another safety-first measure is the providing of toe boards along the lower edge of railings of galleries, to prevent tools and other objects falling on men below. A small space is left between the bottom of the boards and the floor to facilitate cleaning.

The current demand for economy in industry has led to the reclamation of damaged tools, such as die stocks, drills, pipe cutters and tapping machines. Repair parts are procured, the tools thoroughly cleaned and painted, and restored to their proper places for further use. The company have thus rehabilitated about $300 worth of tools that otherwise would have been discarded.

Gas bags broken as the result of the action of benzolized water on the rubber have been patched at a cost of $1, a new bag costing $30. A large topping machine that was destined for the scrap heap because of a broken saddle has been rescued for further service by the bolting on of a gas-tight plate.

In these ways the life of much of the company's equipment is being prolonged.

Springfield, Mass., Announces Increase

The Springfield Gas Light Company has just announced that beginning July 1, the price of gas would be increased 10 cents a thousand cubic feet, making the net price 95 cents.

In a statement to consumers, Manager W. H. Bradley says that the cost of coal, oil, labor and materials has advanced to such points that a material increase in the cost of producing gas has been brought about, and that in order to meet the additional burdens and to give the public adequate service an increase in the price at which gas is sold to consumers is imperative.

Mr. Bradley said that the increase is temporary, and the company pledges itself to reduce the price to its present level "as soon as normal conditions are restored."

Citing reasons for the increase, Mr. Bradley said that the company used to buy coal at the mines for between $1 and $2 a ton, but that the latest spot coal quotations to the company were $4 a ton, plus $2.85 freight from the mines to Springfield. The company uses from 150 to 175 tons a day. Oil, used in the manufacture of water gas, costs 65 to 70 per cent more than formerly, and the company's consumption is about 175,000 gallons a year. Cast iron pipe, used in laying extensions, formerly was bought for $19 to $20 a ton, and now costs $60.

The company, because of the high cost of pipe, is making no extensions except those that are absolutely necessary, and it will make none during the present abnormal period, Mr. Bradley said.

The Springfield Gas Light Company serves Springfield, Chicopee, South Hadley, Longmeadow, West Springfield, Agawam, East Longmeadow and Ludlow, and the new rate will be effective in all these places. The company's statement is as follows:

"When this company was taken over in 1901, by its present management, the price of gas was $1.05 net per 1,000 cu. ft. Since then, as conditions have warranted, the rate has been voluntarily reduced from time to time, until in 1911 the rate became 85 cents net, as low, with one exception, we believe, as any company operating in New England at that time.

"During the past year the cost of coal, oil, labor and materials has advanced to the highest level known in

years, and in common with others we are facing further increased costs of all kinds which are cumulative, and will mean a material increase in our annual expenses.

"To enable this company to meet these changed conditions and to continue giving its customers adequate and satisfactory service, our directors have voted that effective July 1 our cash discount for prompt payment of bills will be reduced from 15 cents per 1,000 to 5 cents per 1,000 cu. ft., thereby increasing the net rate throughout our territory 10 cents per 1,000 cu. ft.

"We regret very much the necessity for making the above change, and wish to assure our customers that it is a temporary arrangement to meet present increased cost and that as soon as normal conditions are restored, the old discounts will be resumed.

"On May 1 our industrial customers were notified that temporarily, we would abolish the sliding scale for gas used in quantity. In view of the fact that we are now reducing our discount for prompt payment, making the net rate higher, the sliding scale will remain in force as before."

Cutting in of New Line Successfully Accomplished

The process of making the final connection between the governor house and the distribution system of the Malden & Melrose (Mass.) Gas Light Company is thus described by R. S. Carter, superintendent. When it was found necessary, recently, to rearrange the company's holder piping system and install for emergency purposes new 24 automatic and balance governors, it was also decided to locate the housing for a water-gas and coal-gas Thomas electric meter in the same building.

In order to complete the pipe connections in the meter and governor house with the customary by-passes, required the installation of 23 flanged valves. The old layout of piping had only one outlet to the main distributing system. This served its purpose, but being located directly under the foundation of a 2,000,000-ft. storage holder it was impossible to examine the pipe and joints. For this reason it was decided to abandon the line.

To provide a more adequate and accessible supply pipe to the street mains, a number of large connections and pipes were laid in the holder lot. The cutting in of the 30-in. tee necessitated bagging off and breaking into the main trunk line, and had to be done with the utmost dispatch. Thirty-five thousand customers depend on this supply.

A 30-inch canvas covered bag was inserted in the main through a 4-in. hole. The bag was inflated with a service pump and the air held in the bag by means of a ¾-in. hose cock fastened to the stem. A canvas covered bag was used, owing to the fact that the action of oily water in the main is liable to cause rubber to be blistered and burst. An extra bag was left at hand, for use in case the first broke.

A 30-in. stopper was placed behind the bag as an extra precaution. The tee was set one day, the pipe cut and the final connection made the following day. When completed, it was necessary to extract the air from the line, about 300 ft. long. This was done by inserting a piece of 2 in. pipe into the hole through which the stopper had been placed, its lower end extending to within 2 in. of the bottom of the main. It required 45 minutes to clear the line, the gas being furnished through one of the operating valves in the governor house.

First aid equipment, held in readiness and inspected before the job was begun, consisted of a first aid jar and contents, gas-proof helmet, pump and hose connections, and a life rope.

Extension Charges Increased

The Consolidated Gas, Electric Light and Power Company of Baltimore has filed with the Public Service Commission a supplemental schedule, increasing the charges for gas and electric main extensions. The present price for gas mains is 70 cents per lineal foot; this is made $1.10. Present charge for excess service pipe is 20 cents per foot; this is changed to from 45 cents to 65 cents, depending upon size of pipe used.

Electric extension charges are raised from 10 cents to 15 cents per foot, from 15 cents to 25 cents, from 20 to 30 cents and from 25 to 35 cents per foot, depending upon the number of wires required and also upon whether or not existing pole lines can be used.

The length of free extensions (gas and electricity) is not changed by the new schedule.

San Diego Gets Big Army Cantonment

Secretary of War Baker has approved San Diego, Cal., as the location for one of the permanent army cantonments each of which will house from 25,000 to 30,000 in war time and 15,000 men in peace time.

This will mean an immediate increase in the population of San Diego of at least 30% and to the San Diego Consolidated Gas & Electric Company it probably means an increase in receipts from gas sales amounting to $140,000 to $150,000 per year. In addition the Company will also furnish the electrical requirements of the cantonment.

The following paragraphs are quoted from Manager Jones' letter concerning the permanent location of this cantonment:

"I think this is one of the biggest things that ever happened to San Diego. It means an increase over night practically of 30% of the present population around the entire bay. It means a pay-roll of $30,000 per day, a great part of which is bound to remain in San Diego. It means the purchase of a vast quantity of supplies in San Diego and I think, frankly, that it means unheard of prosperity for us here.

"In addition to this cantonment, we will have a naval training station in the Exposition buildings in the park, probably 5,000 men; marine base at Loma Portal, right at the Golf Club, somewhere from 1,000 to 5,000 men; naval reserves at Wonderland Park at Ocean Beach, probably 1,000 men; and aviation camp at North Island (Coronado Beach), which will undoubtedly be taken over by the Government."

Increase in Rates at Amsterdam, N. Y.

The Chuctanunda (N. Y.) Gaslight Company has announced an increase in the price of gas. Although the preliminary notices did not say so, the increase has been laid before the public service commission, second district.

The company claims that the advanced cost of production makes a higher price for gas necessary in Amsterdam, N. Y.

The public service commission has the power to permit the increase or prevent it. Persons who believe that a higher price for gas is not justified will be given a hearing, the company will present its case, and the decision will be in accordance with the facts as shown.

Illuminating Engineering Society Abandons Convention

After careful consideration of the national emergency the Council decided to abandon all plans for the usual annual convention which was to have been held in Newark, N. J., September 17, 18 and 19. This action was taken in view of the fact that the resources of the Society, both in personnel and finance, should be conserved to meet any emergency demand that might arise because of the war.

Consideration was given to holding a convention of shorter duration, possibly of one day. It was decided to leave this matter in the hands of the Council Executive Committee, which acts in place of the Council during the summer months. The Executive Committee was authorized to consider the advisability of holding a meeting in the Fall, to consider questions of illuminating engineering having a bearing on the war situation.

In all probability a convention of three days, as originally planned, would not be well attended because of the large number of the membership who have or will enlist and who are or will be engaged in the various fields of preparedness activity.

The Committee on Papers was authorized to complete arrangements with the authors of convention papers, the same as though the convention were to be held. It is proposed to circulate these papers, to obtain written discussions on them and to publish both papers and discussions in the TRANSACTIONS. In effect this procedure will amount to a correspondence convention.

Massachusetts Gas Commission Doings

The Gas and Electric Light Commissioners of Massachusetts have rereceived a petition from the Framingham Gas, Fuel and Power Company in which the latter seek authority to extend its lines into the neighboring town of Ashland. A hearing has been fixed for June 27, at 10 a. m. at the Commission's office.

The Commission has approved an issue, by the Randolph & Holbrook Power & Electric Company, of 400 shares of new capital stock, at $100 per share, to liquidate notes; and an issue of 1,440 shares of stock, at $160 by the Weymouth Light & Power Company. Of the latter, 1,250 shares are to pay notes of March 1, 1917, and 190 shares to meet obligations on account of recent plant extensions.

Boston Output Increase

The gas output of the Boston Consolidated Gas Company for May was 479,943,000 cu. ft., an increase of 14.1 per cent. over the corresponding month a year ago.

Ruth Law Flies for Doherty Organization

Ruth Law, the girl aviator who flew from Chicago to New York, and who made a night trip over New York harbor when Henry L. Doherty & Company illuminated the Statue of Liberty, again flew under the auspices of the same firm, —this time to boost the sale of Liberty Bonds.

Details of the project were hurriedly arranged, and Miss Law left Cleveland early on the morning of Tuesday, June 5. She flew over Warren, Alliance, Massillon, Mansfield, Elyria and Lorain, ending her day's trip at Toledo. There she was entertained at a luncheon given in her honor by twenty of Toledo's most representative citizens, including the Mayor. The aeroplane was shipped by rail to Lincoln, Nebraska, where she now is. From there she flew over Omaha and proceeded to various Doherty properties. The route contemplated takes her to St. Joseph, where she will land and then go to Kansas City, Hutchinson, Kansas and Wichita. A detour was made on this trip which took her to several Doherty Kansas subsidiaries flying over Eldorado, Augusta, Winfield and Arkansas City. The terminus of this part of the trip was to be Bartlesville, Okla. She had not decided whether to ship or fly the machine from there to Joplin, Mo., but once in that city she intended to make flights over various important places in the Empire district. When the Empire properties have had a chance to see Miss Law and get the paper bombs from the sky, the aeroplane was to head for St. Louis. From there the next stop was to be Chicago, ending the trip on June 15, the last day on which subscription books of the Liberty Loan will be open.

Miss Law dropped thousands of paper bombs en route. On the face of each of them was her picture and the words: "I have volunteered to do my bit above the trenches. Will you do your bit with your money?" There was several slogans on the reverse sides of the bombs. These read:

"If you can't fight, your money can buy a Liberty Bond to keep off German bombs. Buy your bond today."—Ruth Law.

"A Liberty Bond in your home or a German bomb on your home! Which is your choice? Mine was a bond. Buy yours today."—Ruth Law.

"You buy a Liberty Bond or the next bomb dropped on you may be a German bomb. . . . I've bought my Liberty Bond. Will you buy yours today?"—Ruth Law.

Personal Notes

N. C. DRAPER, manager of the Sioux Falls (S. D.) division of the Northern States Power Company, has been elected president of the South Dakota Electrical Association.

R. C. COFFY, manager of the Everett (Wash.) Gas Company, has been appointed chairman of the Red Cross Publicity Committee.

DONALD MCDONALD, manager of the Louisville (Ky.) Gas & Electric Company, was appointed on one of the seven committees which supervised the army draft registration on June 5.

ROBERT MONTGOMERY, manager of the Commercial Department, Louisville Gas & Electric Company, is in charge of Louisville's delegation of advertising men who will attend the St. Louis convention of the Associated Advertising Clubs.

WILLIAM MCDONALD of D. McDonald & Company, gas meter manufacturers of Albany, suffered a bereavement through the death of his beloved wife, Mrs. William McDonald, on Friday, June 8, 1917.

ALBERT V. HORN, for the past three years manager of the Illinois Northern Utilities Company at De Kalb, Ill., and formerly with the same company at Dixon, has tendered his resignation to take effect July 1. Mr. Horn has accepted a position with a big Chicago firm as western representative and will have his office in San Francisco.

HERCULES B. ATKIN, manager of the Waukesha (Wis.) Gas & Electric Company, has been offered a position as district manager of the Philadelphia Suburban Gas & Electric Company, in charge of the business at Phoenixville, Pottstown and West Chester, Pa. Mr. Atkin entered the Waukesha company five years ago as draftsman and two years later was made manager. He will be succeeded by George Boetler, formerly manager at Pottstown.

E. D. ROOT, for the past six months salesman for the gas and electric department of the Coast Counties Gas & Electric Company, Watsonville, Cal., has resigned his position and will return to his home in Rochester, N. Y. He will be succeeded by F. A. Regan of San Francisco.

WILLIAM WHEELER, for many years in the employ of the Interstate Public Service Company, Greenfield, Ind., has been promoted to the position of superintendent. Mr. Wheeler has been in charge of the pumping station east of the city since it was established and has given efficient and faithful service in every capacity.

THE PEOPLES GAS LIGHT & COKE COMPANY, Chicago, Ill., have made the following changes in their executive officers: T. V. Purcell, secretary, succeeding Lyman A. Wiley; Joseph R. Dougherty, treasurer, succeeding W. S. McCrea; Robert Blair, assistant secretary, succeeding E. J. H. Wright; and A. L. Tossell, assistant treasurer, succeeding W. D. Gregory. The resignation of F. A. Crane, second assistant secretary and treasurer, has been accepted, but as yet a successor has not been named. All of the new officials have risen through the ranks and have periods of service of twenty or more years behind them. The men they succeeded in each case resigned on pensions, some of the men after thirty years' service with the company.

THE CONSOLIDATED GAS COMPANY OF TORONTO has recently made an announcement of the death of G. E. Littlewood, formerly employed in the gas works, and O. Goode, of the meter reading department, who were killed in service in France. Approximately 36 other employees of this company have given up their lives, either killed, died of wounds or through sickness, and about 80 have been wounded in action.

R. C. PAYNTER has recently resigned from the Consolidated Gas Company of Toronto, after serving nine years in the commercial accounting division. On the eve of his departure about fifty employees of the company met in the company's board room, and after a short address by J. J. Anderson, secretary, presented Mr. Paynter with a fine fumed oak armchair and a beautiful coffee percolator. He was also presented with a fountain pen from the Rifle Association, office team. G. Donaldson is to be advanced to Mr. Paynter's position.

ROBERT F. CROWELL has recently left his position with the Bridgeton (N. J.) Gas Light Company to report at Fort Meyer, Va., where he is now in training at the Officers Federal Reserve Camps. Just before Mr. Crowell left, the employees gathered in a body and the superintendent, Jacob B. Jones, presented him with a beautiful silk flag and a leather traveling case from the employees in appreciation of his fellowship and associations with them. Mr. Jones extended the sincere best wishes of every employee and assured Mr. Crowell that his position would be held open for him.

THE DOHERTY ORGANIZATION made the following changes in executives on June 1: A. F. Traver, superintendent of the Denver (Colo.) Gas & Electric Light Company, to be manager of the Spokane (Wash.) Gas & Fuel Company. T. O. Kennedy, manager of the Massillon (Ohio) Electric & Gas Company, to be superintendent at Denver. W. O. Custer, power specialist of the Mansfield Electric & Power Company, to be manager at Massillon.

Construction Notes

Port Arthur, Tex., Plant to Be Improved

A. F. Beringer, a member of the firm of P. W. Brooks & Company of New York, which company owns the Port Arthur Gas Company, is in Port Arthur. He is in connection with Manager J. S. Connelly, going over the gas supplying situation, the company at this time placing additional equipment with a view of doubling its capacity. Mr. Beringer said: "It is the intention of our company to give Port Arthur as up-to-date a gas plant as exists anywhere. The supply of this fuel will be kept up to the greatest demand to be made on it and the service given in this city will be equal to similar service anywhere. When we have this installation finished we will be in position to furnish more gas than the city at this time can consume, the equipment being installed on designs to take care of the future as well as the present."

Sheldon, Ia., Plant Progressing

The remodelling of the old brick and tile company building on 11th Street, Sheldon, Ia., to meet the needs of the Sheldon Gas Company, is going on at a rapid pace. The Public Improvement Company of Minneapolis, has the contract. The first ground was dug some days ago in the east part of town for laying of mains, which will be placed about three feet underground. Mr. Glenn is personally supervising the work and is pushing same to an early completion. It is probable that gas can be used for cooking from the Sheldon Gas Company before Sept. 1.

Utah Extensions Completed—Cost $75,000

The work on the extension of the mains of the Utah Valley Gas & Coke Company to Springville and Spanish Fork has been completed and the gas turned on for the consumers of those districts.

It was about sixty days ago when the company began to extend their mains to connect up with these two cities. The cost to the company for material and labor has been about $75,000. The work necessitated the laying of 12 miles of mains, and the placing of 4 miles of laterals in Springville, where they have connected up with about 70 new consumers and between four and five miles in Spanish Fork, where they have about 100 consumers.

The local managers of the company are to be commended for the energy they have displayed on the completion of this work, as the weather conditions for the past two months have not been favorable, on account of so much wet weather.

Although this work has had the main attention of the management yet they have continued their campaign in Provo, with the result that the company now are connected up with about 1,000 consumers in this city.